Volume 4
Issue 7

RISC USER

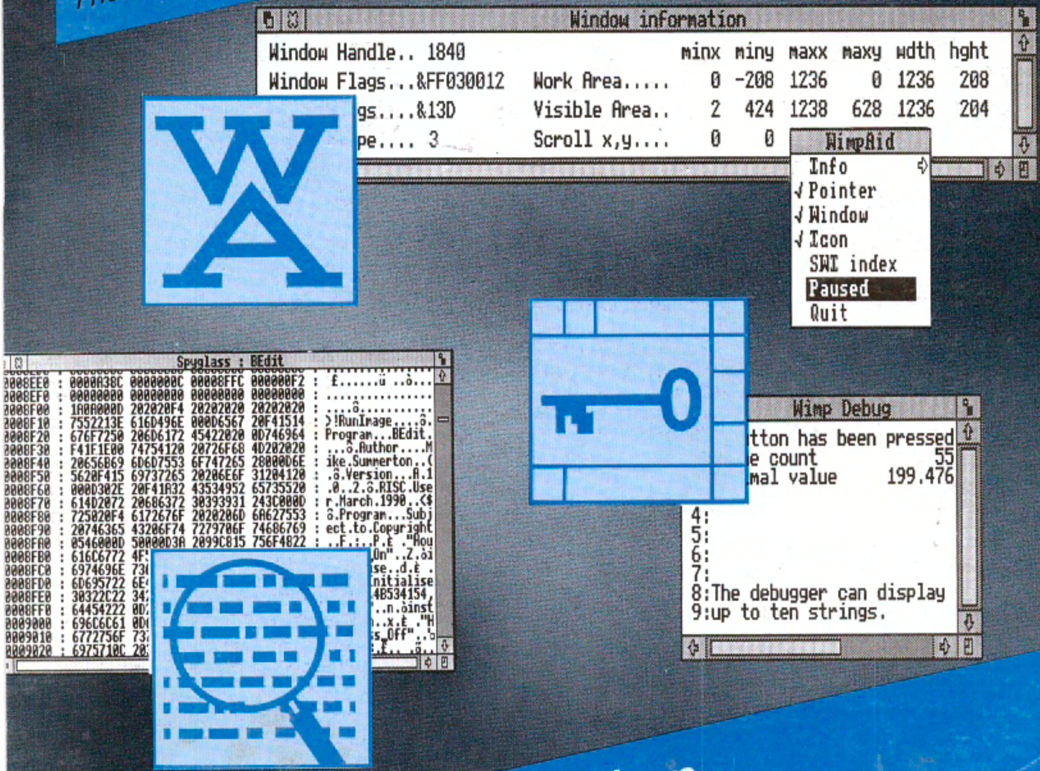
JUNE 1991
Price £1.90

Using ANSI C

SoundTracker Keyboard

FastWipe Utility

Going International



```
Window Handle.. 1840                      minx  miny  maxx  maxy  wdth  hght
Window Flags...&FF030012  Work Area.....     0  -208  1236     0  1236   208
            gs....&13D    Visible Area..     2   424  1238   628  1236   204
            pe.... 3      Scroll x,y....     0     0
```

```
008BEE0 : 0000A3BC 0000000C 0008FFFC 000000F2 :  £......ü ..ò...
008BEF0 : 00000000 00000000 00000000 00000000 : ................
008BF00 : 1A0A000D 202020F4 20202020 20202020 : ....ô...........
008BF10 : 7552213E 616D496E 000D6567 20F41514 : >!RunImage....ô.
008BF20 : 676F7250 206D6172 45422020 0D746964 : Program...BEdit.
008BF30 : F41F1E00 74754120 20726F68 4D202020 : ...ô.Author....M
008BF40 : 20656B69 6D6D7553 6F747265 28000D6E : ike.Summerton..(
008BF50 : 5620F415 69737265 20206E6F 31204120 : .ô.Version...A.1
008BF60 : 000D302E 20F41A32 43534952 65735520 : .0..2.ô.RISC.Use
008BF70 : 614D2072 20686372 30393931 243C000D : r.March.1990..<$
008BF80 : 725020F4 6172676F 2020206D 6A627553 : ô.Program...Subj
008BF90 : 20746365 43206F74 7279706F 74686769 : ect.to.Copyright
008BFA0 : 0546000D 50000D3A 2099C815 756F4822 : ..F.:..P.È ."Hou
008BFB0 : 616C6772 4F                              On"..Z.òi
008BFC0 : 6974696E 73                              se..d.È .
008BFD0 : 6D695722 6E                              nitialise
008BFE0 : 30322C22 34                              4B534154,
008BFF0 : 64454222 0D                              ..n.òinst
0009000 : 696C6C61 0D                              ..x.È ."H
0009010 : 6772756F 73                              s_Off"..ò
0009020 : 6975710C 20                              .È...ô..
```

```
tton has been pressed
e count              55
mal value       199.476
4:
5:
6:
7:
8:The debugger can display
9:up to ten strings.
```

Debugging the Wimp

The magazine and
support group
exclusively for users
of the Archimedes

ISSUE
7

VOLUME 4
JUNE 1991

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EDITORIAL

RISC USER PRICES HELD

The budget in March saw an increase in the rate of VAT from 15% to 17.5%. VAT does not apply to magazines and to magazine subscriptions so there is no change anyway as far as these are concerned. We are obliged to charge VAT on all software which we sell and on services which we provide. That applies to magazine discs, to our PD Library and to other RISC User products like ArcScan. However, we have decided to absorb the VAT ourselves and there will therefore be no change on the prices of any of these items, with one small exception. Because of the arithmetic involved, PD discs have had to be repriced at £3.00 instead of £2.99 as previously.

We have less control over the prices on the extensive range of other products which are sold by BEEBUG Retail, and latest prices will be shown in a new Retail Catalogue which will be mailed to all subscribers shortly. In the meantime, you would be advised to check by phone on the price of any item you wish to order from BEEBUG.

RISC USER MAGAZINE DISC

The RISC User magazine disc continues to prove very popular with readers. We already pay authors a fixed fee for any program which we publish only on the magazine disc (articles and programs published in the magazine are of course paid for as well). We want to encourage authors to contribute more substantial and better quality applications for publication on the magazine disc, and to support this we will in future pay for such contributions on their merits up to £250 for an outstanding program.

Programs for publication may be written in Basic, ARM assembler or in C, but the source code must always be included in any submission. Applications should be RISC OS compatible and conform strongly to Acorn's guidelines. Writing a substantial Wimp program is no simple task, but from the contributions we receive it is clear that many programmers are not sufficiently aware of what is required. We are in the process of preparing new guidelines for potential contributors which will set out the standards we believe must be met for acceptance. We will let you know when these guidelines are available.

We would also welcome ideas for applications from those who do not feel sufficiently competent to write a program themselves. We may well be able to find a programmer who can implement a good idea.

WIMP PROGRAMMER'S TOOLKIT

This is our latest collection of programs, and this month's article by Lee Calcraft on ***Wimp Debugging*** *provides an introduction to the subject. The disc will bring together a number of powerful debugging aids previous published in RISC User (or on the magazine disc), including extensions as appropriate, together with some previously unpublished applications. The disc will be accompanied by an A5 size manual. Full details on the* ***Wimp Programmer's Toolkit*** *are contained elsewhere in this issue. We also have active plans for further software products which will be announced in due course.*

NEXT ISSUE

Finally, a small reminder that the next issue will be for the two months of July and August, and will appear towards the end of June.

M.W.

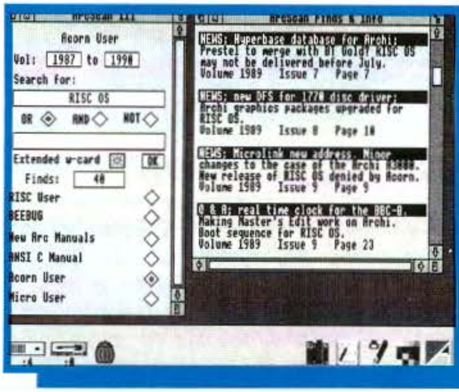
ArcScan III

Now offers two NEW databases: Acorn User and Micro User magazine indexes

New ArcScan Library Disc

Offers an index for Acorn User and Micro User magazines from January 1987 to date. This includes all references to the Archimedes, which was launched in June 1987.

The Library Disc will be regularly updated to include the latest issues, and upgrades will be available from BEEBUG. As a **Special Offer** you can purchase an ArcScan Library disc with vouchers for two upgrades for the price of £12.95. In the future we are hoping to add an index for A&B and Archimedes World magazines.



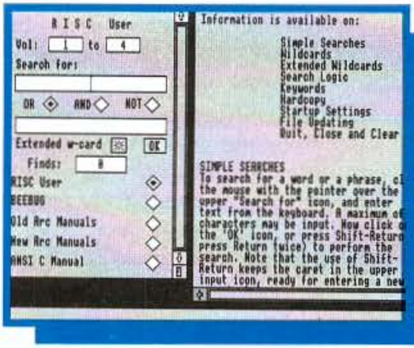
NEWS; Hyperbase database for Archi; Prestel to merge with BT Gold? RISC OS may not be delivered before July.
Volume 1989 Issue 7 Page 7

NEWS; new DFS for 1770 disc driver; Archi graphics packages upgraded for RISC OS.
Volume 1989 Issue 8 Page 10

NEWS; Microlink new address. Minor changes to the case of the Archi A3000. New release of RISC OS denied by Acorn.
Volume 1989 Issue 9 Page 9

Q & A; real time clock for the BBC-B. Making Master's Edit work on Archi. Boot sequence for RISC OS.
Volume 1989 Issue 9 Page 23

Searching is almost instantaneous



Information is available on:

Simple Searches
Wildcards
Extended Wildcards
Search Logic
Keywords
Hardcopy
Startup Settings
File Updating
Quit, Close and Clear

SIMPLE SEARCHES
To search for a word or a phrase, cl
the mouse with the pointer over the
upper "Search for" icon, and enter
text from the keyboard. A maximum of
characters may be input. Now click o
the 'OK' icon, or press Shift-Return
press Return twice) to perform the
search. Note that the use of Shift-
Return keeps the caret in the upper
input icon, ready for entering a new

The on-screen help in action

ArcScan III Program Disc contains the following Databases:

- RISC User Volumes 1, 2 and 3
- BEEBUG Volumes 1 - 9

The Indexes to the following major Archimedes manuals:

- Basic User Guide (Arthur)
- Programmer's Reference Manual (Arthur)
- RISC OS User Guide
- RISC OS Basic Manual
- RISC OS Programmer's Reference Manual
- ANSI C Manual (Release 3)

Some of the features ArcScan III offers:

- provides flexible keyboard search on any entry
- improved search logic - choice of 3 logical operators: OR, AND and NOT
- now with new extended wildcard option
- features dynamic memory management, returning unused memory to the Wimp
- uses dedicated ARM code routines enabling rapid information retrieval
- finds are displayed in a fast scrolling Wimp window allowing you to browse through all entries retrieved
- fully user customisable allowing other databases to be automatically incorporated in the control panel display
- a new detailed manual and extensive on-screen help

ArcScan Library Disc	**£ 7.95** members (£9.95 non-members)	Stock Code **PAL1**
ArcScan Library Disc + 2 Upgrades	**£12.95** members (£16.95 non-members)	Stock Code **PALX**
ArcScan Library Disc Upgrade	**£ 3.45** members (£4.45 non-members)	Stock Code **PALU**
ArcScan III Program Disc + Manual	**£14.95** members (£18.95 non-members)	Stock Code **PAS3**
ArcScan III Program Disc + Library Disc+Manual	**£19.95** members (£24.95 non-members)	Stock Code **PASX**
ArcScan III **Upgrade** (from ArcScan II)	**£ 4.75** members (£7.95 non-members)	Stock Code **PAU3**

All prices are inc. VAT. Please add £1 p&p. For upgrade, please send the old ArcScan II disc or label. Please quote your Membership number.

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• News • News • News • News

GROWING PD SOFTWARE FOR THE ARCHIMEDES

The volume of Public Domain software continues to expand, with announcements of two further PD libraries, *Telstar Public Domain* and *Westbourne Services*. Both PD libraries offer a catalogue and demo disc for just £1.00. Telstar is at 40 Alderbrook Close, Rolleston, Staffs DE13 9AH (no phone), and Westbourne is at Westbourne House, 34 Bradley Street, Wotton-under-Edge, Glos. GL12 7AR, tel. (0453) 842576.

CONSULT YOUR LIBRARY

Enthusiasts for programming in C will welcome a new book from Silicon Press, *The C Programmer's Companion* by R.S.Jones. This book is sub-titled *ANSI C Library Functions* and that is precisely the subject of this 150 page paperback, though it is not specific to Acorn ANSI C. The publisher's recommended price is $19.95, but potential purchasers should check it out for a UK price (ISBN 929306-09-0).

CROSS ASSEMBLER

Baildon Electronics has announced the availability of the *Cross-32 Meta Assembler* for the Archimedes under licence from Universal Cross Assemblers. Using a table approach, the cross assembler will assemble programs for micro-processors, micro-controllers and digital signal processors from more than 35 families. The cross assembler can be driven from the Desktop, from the command line, or from batch files.

The assembler accepts a substantial list of directives, including support for conditional assembly and macros. Output is in absolute binary, or Intel or Motorola hex formats. The Cross-32 Meta Assembler is available through Ian Copestake Software, Microprocessor Engineering Ltd. and Farnell Electronic Components at a recommended price of £175 plus VAT. For more information contact Baildon Electronics, 1 Fyfe Crescent, Baildon, Shipley, W.Yorks BD17 6DR, tel. (0274) 580519, fax (0274) 531626.

SERIAL PORT EXPANDS

The Serial Port is expanding its range of products for the Archimedes, and at the same time opening a new distribution and service centre at Westbury, Wilts. New products include a range of low cost drive upgrades using SCSI and IDE interfaces at prices from £259 for an internal 40MByte IDE system; a 24-bit colour graphics card for £179 (reviewed in this issue); a combined sampler and MIDI card at just £69 (to fit in the Econet socket) or £79 in a podule version; and a new version of the Arcterm 7 communications program to include Minitel emulation and other new features. All prices exclude VAT.

The sound sampler and MIDI interface is an 8-bit sampler with variable sampling rates up to 250KHz. Input is via a 3.5" jack allowing connection to many standard hi-fi units. The accompanying software will support over-sampling, sample rate conversion and software filtering. The samples are claimed to be ideal for use with The Serial Port's Tracker (see review in RISC USER Volume 4 Issue 6). The MIDI interface provides 16-channel MIDI IN and MIDI OUT ports. The Econet fitting version should be available now, and the podule version in June.

For more information, contact The Serial Port, Burcott Manor, Wells, Somerset BA5 1NH, tel. (0243) 531194, fax (0243) 531196.

SUPERIOR SPEAKS OUT

Already well known for its *Speech!* system for the BBC micro, Superior Software has announced an Archimedes A3000 version of this speech synthesizer. The system can be fully controlled from the RISC OS Desktop, or corresponding commands incorporated within your own programs. Superior's system follows hard on the heels of similar offerings from PEP Associates (see review in this issue), and from Atomwide reviewed in RISC User Volume 4 issue 3.

The Superior version for the Arc costs £19.95 (inc. VAT), and versions for the BBC micro have been re-released at prices ranging from £9.95 to £14.95 (again inc. VAT).

For more details contact Superior Software, P.O.Box 7, Brigg, S.Humberside DN20 9NH, tel. (0652) 58585.

How much information can you fit into an area 97 by 53 mm?

GULF WAR DRAWS TO CLOSE

by Michael Lawrence
Baghdad Correspondent

Sources close to the American military tonight said that they were hopeful that a ceasefire would be called in Iraq and Kuwait within the next twenty-four hours.

The dramatic change in direction was triggered by a broadcast on Baghdad radio stating that the time had forces commander General Norman Schwarzkopf, who is nicknamed Storming Norman because of his no-nonsense approach of getting on with it as far as war is concerned, refused to comment directly on the events leading up to the rapid change in the situation. Schwarzkopf did however say that a ceasefire would be seen as an admission of defeat by Iraq, proving that the vast man-power of Hussein's army was no match for the co-ordinated hi-tech allied forces was pressing for an answer from the US military commanders as to how an American A10 Thunderbolt aircraft mistakingly launched an attack on a British army unit, killing several soldiers.

Meanwhile, the prime minister, John Major, was yesterday briefed on the new developments by President Bush in a telephone call made to the country retreat Chequers. Sources say that the call lasted over thirty

We've managed 4Mbytes of RAM! (and 2Mbytes of ROM)

The new user-fittable 310 RAM upgrade from Beebug

£349.00

Available May

Price excludes £8 carriage and VAT. Fitting kit consisting of PLCC and ROM extractor tools can be loaned for a deposit of £40 (fully refundable). Full details on request. Information is given in good faith, but Beebug Ltd reserve the right to change the specification at any time without prior notice.

BEEBUG

The leaders in quality memory upgrades

• News • News • News • News

PRICES DOWN ON MEMORY UPGRADES

Acorn has announced the appointment of Gary Johnson, formerly with Siemens Nixdorf Information Systems, as its new Director of Finance. More importantly for Archimedes users, Acorn has reduced the prices on its memory upgrades for the BBC A3000 and Archimedes 400 series. On both ranges a 1MByte upgrade will now cost £79 (compared with £129 previously for the A3000, and £149 for the 400 series). Including VAT at 17.5%, the recommended shop price of an upgrade will now be £92.83. Acorn memory upgrades are available through BEEBUG Ltd.

BBC ACORN USER SHOW

This year's *BBC Acorn User Show*, organised by Safesell Exhibitions Ltd., will take place at the Thames Suite of the Wembley Conference Centre from 11th to 13th October 1991. The new venue will offer more space than last year. The show is supported by both BBC Acorn User and Acorn Computers Ltd., and BEEBUG is among many companies in the Acorn field who have already booked space.

For more information on the BBC Acorn User Show contact the organisers at Market House, Cross Road, Tadworth, Surrey KT20 5SR, tel (0737) 814084.

THE VIEW FROM SHERSTON

Sherston Software has launched two new products aimed primarily at the schools market. *Viewpoints* is described as an interactive environment which children can explore on the computer. The package includes three discs, a 64 page Teachers' Book, colourful maps and pictures, and costs £35 plus VAT.

The second offering is entitled *!Draw_Help*, comprising two discs and a 100 page manual. It is intended to provide full tutorial support for the Draw application supplied with every Archimedes. This pack costs £15.95 inclusive, and while clearly educational in its orientation may appeal to other users who would like assistance in using Draw.

Sherston Software is at Swan Barton, Sherston, Malmesbury, Wilts SN16 0LH, tel. (0666) 840433, fax (0666) 840048.

A NEW GUISE FOR THE ARCHIMEDES

Guise is a virtual toolkit (released by the Scottish Council for Educational Technology) which facilitates the creation of Graphical User Interface (GUI) applications for a variety of platforms (systems). For example, applications ported from an Apple Macintosh to RISC OS will lose the Macintosh personality and gain the RISC OS personality.

Guise libraries are currently available for the Acorn Archimedes with RISC OS, and the THINK C and Apple MPW development environments for the Apple Macintosh. A Guise library for Microsoft Windows 3.0 is currently under development for release later this year. Guise costs £199.00 plus VAT and is available through SCET, 74 Victoria Crescent Road, Glasgow G12 9JN, tel. 041-334 9314.

LONGMAN LOGOTRON ON TARGET

Longman Logotron's latest support for the new National Curriculum is in the form of 21 photocopiable pupil activity sheets, and a teacher's guide, all aimed at novice users of Logo, both on the Archimedes and BBC computers, using Logotron Logo. The cost is £12.00 plus VAT. For more information contact Longman Logotron at Dales Brewery, Gwydir Street, Cambridge CB1 2LJ, tel. (223) 323656.

MORE VIRUS ATTACKS ON THE ARC

As we go to press we have learned of two more Arc viruses known as *Thanatos* and *Datadqm*. At the moment we have no further information on the latter, but Thanatos seems more vicious than previous viruses. It hides in two files called *RISCOSext* and *TaskAlloc*, so treat with suspicion any files with these names. The virus has been known to reformat floppies, rewrite the first 10K of drives 0, 4 and 5, corrupt CMOS RAM and other unwanted acts of computerised vandalism. We are working on a comprehensive form of virus protection which we expect to feature in the next issue. RU

WIMP PROGRAMMER'S TOOLKIT

A compilation of twelve powerful multi-tasking utilities, supported by a comprehensive manual - an essential aid to any programmer.

SPYGLASS

A multi-tasking memory viewer which allows you to select any running application and display in a window the contents of the memory allocated to it.

WIMP DEBUGGER

A powerful application which allows you to debug Wimp-based programs while testing and running them.

TEMPLATE EDITOR

The latest version of Acorn's FormEd, a multi-tasking application for designing windows and icons.

TEMPLATE FILE BROWSER

This application allows you to view the contents of a template file. It shows all the co-ordinates, flags, titles etc. of each window or icon in a the template.

APPLICATION SHELL GENERATOR

A Desktop utility for creating application directories, Obey files and their sprites.

MENU EDITOR

This application enables you to create and edit Wimp menu structures for use in your own programs.

WIMPAID

A powerful application for Wimp programmers allowing pointer, window and icon parameters to be dynamically displayed on screen.

ICONBAR SHELL GENERATOR

This allows you to build simple multi-tasking programs very easily, by creating a shell which installs an icon on the icon bar and passes information about button clicks and dragged objects to your own routines.

DESKTOP FILE LOADER

A very useful utility which allows you to load a program from the Desktop, rather than run it.

ICON FLAG GENERATOR

Use this application to calculate the value of icon flags easily, without recourse to binary arithmetic.

EASYWIMP

This program provides a ready-made Wimp application shell which can be used for the quick and simple creation of single-window applications.

WIMP MESSAGE MONITOR

An application which provides a means of monitoring the Wimp polling system.

Available from the beginning of June 1991.

Members' Price **£14.95** *inc.VAT (non-members price £19.95).*
Please add £1.00 for p&p.
Stock Code: PWPT

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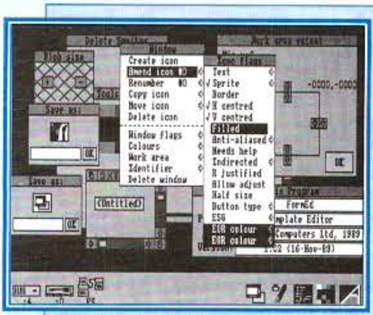
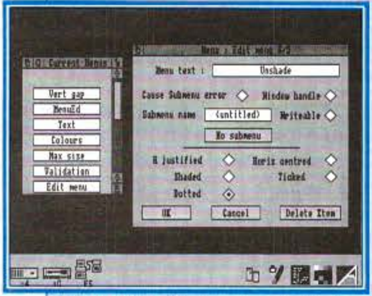
Tel (0727)40303 Fax (0727)860263

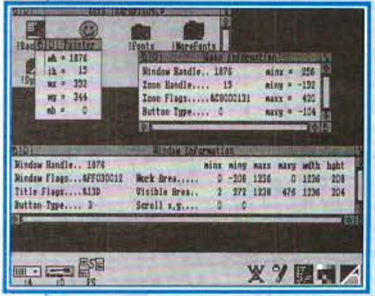


Template editor



Menu text : Unshade
Cause Submenu error ◇ Window handle ◇
Submenu name (untitled) Writeable ◇
R justified ◇ Horiz centred ◇
Shaded ◇ Ticked ◇
Dotted ◈

Menu Editor

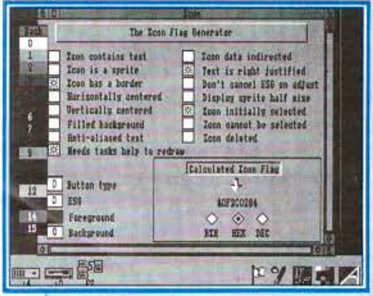


```
wh = 1876
ih =   13
mx =  392
my =  344
mb =    0
```

```
Window Handle.. 1876        minx =  256
Icon Handle....   13        miny = -152
Icon Flags.....&C8000131    maxx =  420
Button Type....  0          maxy = -104
```

```
Window Handle.. 1876                       minx miny maxx maxy wdth hght
Window Flags...&FF030012  Work Area.....     0 -208 1236    0 1236  208
Title Flags....&13D       Visible Area..     2  272 1238  476 1236  204
Button Type.... 3         Scroll x,y....     0    0
```

WimpAid



☐ Icon contains text
☐ Icon is a sprite
☒ Icon has a border
☐ Horizontally centered
☐ Vertically centered
☐ Filled background
☐ Anti-aliased text
☒ Needs tasks help to redraw
☐ Icon data indirected
☒ Text is right justified
☐ Don't cancel ESG on adjust
☐ Display sprite half size
☒ Icon initially selected
☐ Icon cannot be selected
☐ Icon deleted

0 Button type
0 ESG
Foreground
0 Background

&0F2C0284
◇ BIN ◈ HEX ◇ DEC

Icon Flag Generator

Debugging the Wimp

Lee Calcraft takes a look at the use of a number of readily available tools to aid the process of debugging Wimp programs written in Basic or C.

THE DESKTOP FILE LOADER

Program debugging is a complex topic to tackle; and debugging Wimp programs within the Desktop environment can be even more difficult. One problem is that if your program hits even a simple bug which is reported in an error box, you cannot stop the program and inspect the states of variables.

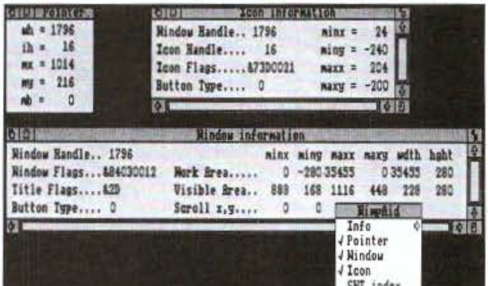
If you are working in Basic, there are two ways to make this possible. The first is to perform test runs of your program from outside the Wimp environment. When the program stops with an error you will be left with the program in memory, and all variables intact.

Not all programs can be run in this way however. But by using the Desktop File Loader (RISC User Volume 3 Issue 6), you can achieve the same effect from within the Desktop. If a Desktop task which has been run using the File Loader is halted, either by selecting Quit from the task's icon bar menu, or through a STOP or END statement inserted into the task's program for debugging purposes, or from some other fatal error, you will be left with the program in memory, and all the variables intact, where they can be examined at leisure. Additionally, the File Loader allows you to edit the program and rerun it without leaving the Desktop, and without even needing to resave it each time.

By using the File Loader, the time taken to debug a Wimp program written in Basic can be dramatically reduced.

WIMPAID

This useful application (RISC User Volume 4 Issue 1) displays a variety of information related to the position of the pointer on the Desktop. Its icon bar menu allows for the provision of information about the pointer, windows and icons. The first displays the handles of the window and icon beneath the pointer together with x and y positions and mouse button state. The second gives full details of the window under the pointer, including window flags, button state and x and y maximum and minimum co-ordinates as well as scroll positions. The third option gives full icon information.



```
wh = 1796
ih =   16
mx = 1014
my =  216
mb =    0
```

```
Window Handle.. 1796         minx =   24
Icon Handle....   16         miny = -240
Icon Flags.....&73D0021      maxx =  204
Button Type....   0          maxy = -200
```

```
Window Handle.. 1796                     minx miny maxx maxy wdth hght
Window Flags...&84030012  Work Area.....    0 -280 35455    0 35455  280
Title Flags....&2D        Visible Area..  888  168 1116  448  228  280
Button Type.... 0         Scroll x,y....    0    0
```

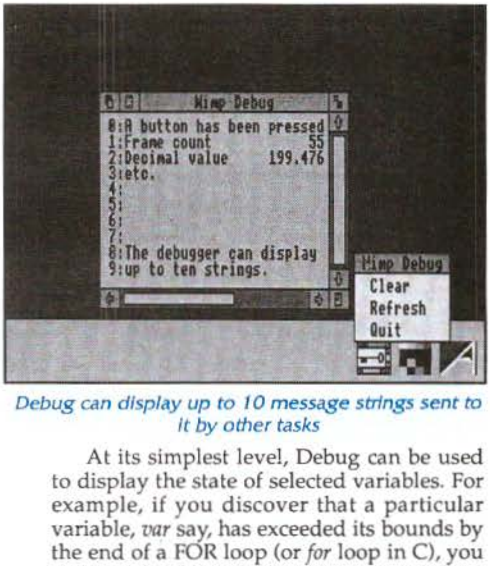
WimpAid in action

WimpAid is very useful if you have "mislaid" an icon in a window generated by the Template Editor - easily done - or if you are having trouble with work area and scroll co-ordinates. By comparing your proposed values with those of a working task, you can iron out any problems that you are having. It is also very useful on occasion to compare your values of button type and window and icon flags with those of tasks which work the way you want yours to. Finally, a very useful option on WimpAid's menu displays a list of all Wimp SWIs together with the corresponding PRM page number.

WIMP DEBUG

The Wimp Debug application (featured in RISC User Volume 4 Issue 3) provides a multi-tasking window allowing the display of up to 10 lines of data about a task under test. One or more short procedures are included in the task under test which allow it to send messages to the debugger. These can be called at any time within the task under test to display the value of any variable, or any other program information.

Procedures for incorporating into test tasks written in Basic, and functions for incorporating into C programs were included in the original article. As an epilogue to the present article, two enhancements to Debug are supplied - see below.



```
0:A button has been pressed
1:Frame count              55
2:Decimal value       199.476
3:etc.
4:
5:
6:
7:
8:The debugger can display
9:up to ten strings.
```

Debug can display up to 10 message strings sent to it by other tasks

At its simplest level, Debug can be used to display the state of selected variables. For example, if you discover that a particular variable, *var* say, has exceeded its bounds by the end of a FOR loop (or *for* loop in C), you could adopt the following approach to display the value of the loop variable A at the critical moment:

```
FOR A=0 TO top
etc.
IF var>bounds THEN PROCdebugvv(0,"bou
nds at A=",A)
etc.
NEXT
```

The equivalent in C would be:

```
for (a=0; a<=top; a++)
{
  etc.
  if (var>bounds) debugvv(0,"bounds at
a=",a);
  etc.
}
```

The Debugger can be particularly useful in tracking down the worst kind of bugs. For example, suppose you have a Wimp program which just crashes fatally from time to time. A good technique is to insert a series of calls to the debugger at periodic points in the area of code which you suspect. For example:

```
PROCdebug(0,"a")
PROCthis
PROCdebug(0,"b")
PROCthat
PROCdebug(0,"c")
PRPCtheother
PROCdebug(0,"d")
```

After the program crashes, line 0 of the debugger will display the last letter that was reached before the crash. Moreover, Debug doesn't even need to be installed until after the crash has occurred - just use its Refresh option.

If your crash is so bad that it freezes the machine, the technique will still work providing you can unfreeze it with a Reset (the button at the back of the Arc keyboard or the RHS of the A3000). Press Reset, then at the star prompt (F12 from the Desktop) type:

```
Show
```

and look at the value assigned to the system variable db$mess0.

Once you have tracked down the area in which the problem arises, you can further refine it by inserting extra calls to PROCdebug (still using line 0 - e.g. PROCdebug(0,"a1"), PROCdebug(0,"a2") etc., until you have pinpointed the problem very precisely.

If the bug causes the machine to hang completely, and nothing short of a power-up or Ctrl-Reset will unfreeze it, you will need to resort to writing debugging messages directly to the Desktop with a sequence similar to the following:

```
VDU4:PRINT TAB(0,0)"a":VDU5
```

In C this becomes:

```
bbc_vdu(4);bbc_vdu(30);
printf("a");bbc_vdu(5);
```

USING SPYGLASS

This Desktop utility, first published in last month's RISC User, provides a multi-tasking memory viewer for any application which has been installed since Spyglass was initialised. The most obvious application for such a useful tool is in sorting out problems associated with blocks of data in memory. For example, it can be used to examine the block of data associated with a particular window and its icons, to check whether it has become corrupted.

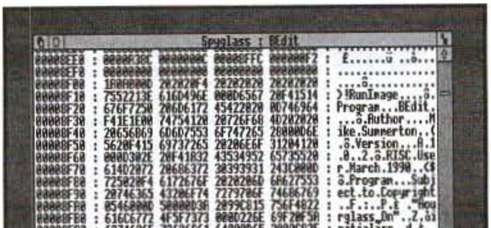
Before you can use Spyglass in this way you need to know the address of the block. This can be achieved by using the Debug application to display the required address. Another is to make use of the enhanced version of Spyglass available on the Wimp Programmer's Toolkit (see below for details). This new version allows you to search for a particular byte, word or string within the memory of the nominated task. A block of window data could be located by searching for the window's title string, or for the names of icons located within it - or even for the particular value of window flags associated with it.

You can also use Spyglass to dynamically display the values of selected variables. And here it has the advantage over Debug in that once you have the address of the required variable, you can watch its value change dynamically by simply refreshing the Spyglass display whenever required. With Debug, you need to insert a specific call to the debug function within the target program each time that you require the variable's new value to be displayed.

The downside is that with Spyglass you must first find the address of the variable (easy with the search option in the enhanced version - or in C use Debug to give the required address), and secondly, you must interpret the data to obtain the required value. With integers and strings it is easy both in C and Basic, since strings appear literally, and standard integers are 32 bit values. But for other variable types - especially floating point variables, more work is involved.

ENHANCEMENTS TO THE DEBUGGER

Two enhancements to the Debugger are described here. The first increases the work area of the display window. This is useful if you are using Debug to display long strings (such as full pathnames). The second reduces the processor time taken by the Debug task. The original version uses null reason codes to check to see if any messages have been left for it by a task under test. This can be a little time consuming if you are performing other CPU intensive tasks such as compiling a language. To avoid this, the enhanced version uses calls to Wimp_PollIdle to refresh its display just twice per second - though you can alter this rate by changing the number added to time% in the following code.



Spyglass allows you to view the memory of any task

The following three lines are sufficient to upgrade the original version of Wimp Debug.

```
  170 whandle%=FNcreate(200,200,456,352,
700,0,&FF000002,"WimpDebug")
  285 SYS "OS_ReadMonotonicTime" TO tim
e%
  290 SYS "Wimp_PollIdle",block%,time%+
50 TO reason%
```

In addition to these enhancements, the Wimp Programmer's Toolkit contains new functions and procedures for passing messages to the debugger from a task under test. RU

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SoundTracker Keyboard

Nick Smith introduces a multi-tasking musical keyboard display, driven automatically by the SoundTracker module.

SoundTracker, the PD program written by Hugo Fiennes which plays tunes in the background under interrupts, will be familiar to many readers. This month we present a new Desktop application that provides a 3 octave musical keyboard which displays the currently playing SoundTracker tune. *Keyboard* is written entirely in ARM assembly language for speed, and a future Workshop article will examine the way in which it works.

THE KEYBOARD DISPLAY

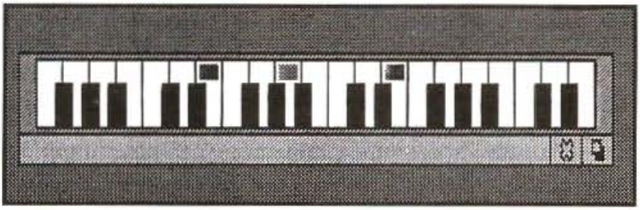
The musical keyboard displayed by Keyboard has three octaves, which covers the entire range of frequencies produced by SoundTracker. The redrawing techniques used will be covered in a future article, but essentially Keyboard reads the current output frequency on each of the four SoundTracker channels every Null_Event. This is translated to note data using a look-up table and the keyboard display is updated, using a different colour for each channel, if the notes have changed since the last Null_Event. In practice this provides a colourful addition to SoundTracker that uses hardly any processor time, and can be run while working on a document in Ovation, for instance. In fact it is so fast that you can install multiple copies of Keyboard, with interesting results.

CREATING THE APPLICATION

First of all, create a directory called *!Keyboard*, in which all the files you need should be saved. Then use Edit to create an Obey file called *!Run* which goes inside the *!Keyboard* directory. It should contain the following lines:

```
IconSprites <Obey$Dir>.!Sprites
WimpSlot -min 8k -max 8k
Set File$Type_CB6 STModule
Set Alias$@RunType_CB6 PlayMod %%0
Run <Obey$Dir>.!RunImage
```

Next, enter Basic and type in Listing 1, and save it with the name *MakeKeybrd*. If you have entered it correctly, when you run the program it will save a file called *!RunImage* with filetype &FF8 (Absolute), which you should place inside the !Keyboard directory if it is not already there. Finally create a sprite file *!Sprites* using Paint - the file should contain a single mode 12 sprite called *!keyboard*, 34 pixels wide by 17 pixels high. The sprite contents are down to your imagination.



Keyboard's screen display

Having done this you should now have a complete Keyboard application. To use Keyboard you will require either version 1.03 or 1.04 of Hugo Fiennes' SoundTracker music player and some tunes to play. A copy of the software required is included on this month's magazine disc, and BEEBUG's PD library contains a wide range of SoundTracker tunes, as well as SoundTracker itself.

PROGRAM DETAILS

Basic V on the Archimedes is excellent for developing Desktop applications quickly and with the minimum of fuss, but if you want a program to run extremely fast, or want to use as little memory as possible, then writing either part or all of your program in ARM assembly language is the only answer.

The first thing that an ARM application needs to do is set up its stack pointer (R13). There are a number of possible ways of dealing with the need for stack workspace, but the simplest is to read the current 'top of application memory' using SWI "OS_GetEnv", and set R13 to this value (assuming you are using a full descending stack). In this way, you have the stack descending from the top of task memory, and you don't need to bother with reserving blocks of memory in the object code. In fact Keyboard needs an extra 512 bytes of workspace for Wimp calls, and so the stack is set below this.

The other calls used by Keyboard are very similar to those in Basic, but one important difference is the handling of errors. Unfortunately it is not easy to set up global and local ON ERROR PROCxxx type error handlers in ARM. Instead you must test the V flag after calling a SWI that is likely to give an error. The V flag is set if an error has occurred, and the application must deal appropriately with the error (e.g. closing an open file), and then call SWI "Wimp_ReportError". This action is performed in Keyboard by the subroutine *Report_Error*.

PROGRAM EXIT

When the application has been quit (for instance by closing the Keyboard window) it must call SWI "Wimp_CloseDown" as normal, and then SWI "OS_Exit" which terminates the current program running in User Mode and returns control to the operating system.

This month's magazine disc contains a full copy of the Keyboard application, along with the latest version of SoundTracker, and a sample tune called Mod for you to listen to.

```
   10 REM          >MakeKeybrd
   20 REM Program   STracker Keyboard
   30 REM Author    Nick Smith
   40 REM Version   A1.00
   50 REM RISC User June 1991
   60 REM Program   Subject to Copyright
   70 :
   80 DIM code% 4096
   90 q=12:x=9
  100 FOR J%=0 TO 2 STEP 2
  110 P%=code%
  120 [OPT J%
  130 :
  140 .Initialise
  150 SWI "OS_GetEnv":SUB q,R1,#512
  160 MOV R13,q:STR R13,r13_st
  170 LDR R4,ver:MOV R0,R4:LDR R1,task
  180 ADR R2,desc:SWI "Wimp_Initialise"
  190 CMP R0,R4:BGE Initialise_jump1
  200 ADR R0,err1:BL Report_Error
  210 BL Finish
  220 .Initialise_jump1
  230 MOV R0,#18:ADR R1,track
  240 SWI "XOS_Module"
  250 STR R3,point:BVC Initialise_jump2
  260 ADR R0,err2:BL Report_Error
  270 BL Finish
  280 .Initialise_jump2
  290 LDR R0,[R3,#&CC]:LDR R1,ver0
  300 TEQ R0,R1:BNE Init_error
  310 ADD R3,R3,#&D0:LDR R2,ver1
  320 LDR R1,ver2:LDR R0,[R3]
  330 TEQ R0,R2:TEQNE R0,R1
  340 BEQ Initialise_jump2b
  350 .Init_error
  360 ADR R0,err3:BL Report_Error
  370 BL Finish
  380 .Initialise_jump2b
  390 TEQ R0,R1:MOVNE R0,#1
  400 STRNE R0,versn:ADR R1,template
  410 SWI "Wimp_CreateWindow"
  420 STR R0,info:STR R0,window
  430 STR R0,[q,#0]:MOV R1,q
  440 SWI "Wimp_GetWindowInfo":MOV R1,q
  450 SWI "Wimp_OpenWindow":B Wimp_Poll
  460 .task EQUS "TASK"
  470 .ver EQUD 200
  480 .err1 EQUD 0:EQUS "Keyboard applic
ation requires a more recent version of
the Window Manager":EQUB 0:ALIGN
  490 .err2 EQUD 1:EQUS "Please load the
```

```
 Sound Tracker module first":EQUB 0:ALIG
N
  500 .err3 EQUD 2:EQUS "You require v1.
03 or v1.04 of the Sound Tracker module"
:EQUB 0:ALIGN
  510 .desc EQUS "Keyboard":EQUB 0:ALIGN
  520 .fini EQUD 0
  530 .track EQUS "TrackerModule":EQUB 0
  540 ALIGN
  550 .point EQUD 0
  560 .info EQUD 0
  570 .r13_st EQUD 0
  580 .ver0 EQUS "r 1."
  590 .ver1 EQUS "03 ("
  600 .ver2 EQUS "04 ("
  610 .template
  620 EQUD &184:EQUD &214
  630 EQUD &47A:EQUD &278
  640 EQUD 0:EQUD 0
  650 EQUD &710:EQUD &87030002
  660 EQUD &3070207:EQUD &C0103
  670 EQUD 0:EQUD &FFFFFC00
  680 EQUD &500:EQUD 0:EQUD &13D
  690 EQUD 0:EQUD 1:EQUD 0
  700 EQUD &58:EQUD &FFFFFFFF
  710 EQUD &1C:EQUD 0:EQUB 13
  720 ALIGN
  730 :
  740 .Wimp_Poll
  750 STMFD R13!,{R0-R12,R14}
  760 .Poll_loop1
  770 LDR R13,r13_st:LDR R0,mask
  780 MOV R1,q:SWI "Wimp_Poll":TEQ R0,#0
  790 BNE Poll_jump1:MOV R0,q
  800 LDR R1,point:BL Null_Event
  810 B Poll_jump5
  820 .Poll_jump1
  830 TEQ R0,#1:BNE Poll_jump2:MOV R0,q
  840 BL Redraw_Window_Request
  850 B Poll_jump5
  860 .Poll_jump2
  870 TEQ R0,#2:BNE Poll_jump3:MOV R1,q
  880 SWI "Wimp_OpenWindow":B Poll_jump5
  890 .Poll_jump3
  900 TEQ R0,#3:BNE Poll_jump4:MOV R1,q
  910 SWI "Wimp_CloseWindow"
  920 LDR R0,[q,#0]:LDR R1,info
  930 CMP R0,R1
  940 MOVEQ R0,#1:STREQ R0,fini
  950 .Poll_jump4
  960 TEQ R0,#17:TEQNE R0,#18
  970 BNE Poll_jump5:LDR R0,[q,#16]
  980 CMP R0,#0:MOVEQ R0,#1
  990 STREQ R0,fini
 1000 .Poll_jump5
 1010 LDR R0,fini:CMP R0,#0
 1020 BEQ Poll_loop1:BL Finish
 1030 LDMFD R13!,{R0-R12,R15}
 1040 .mask EQUD &1010300
 1050 .Finish
 1060 STMFD R13!,{R0-R12,R14}
 1070 SWI "Wimp_CloseDown":SWI "OS_Exit"
 1080 LDMFD R13!,{R0-R12,R15}
 1090 :
 1100 .Report_Error
 1110 STMFD R13!,{R0-R2,R14}:MOV R1,#1
 1120 ADR R2,desc:SWI "Wimp_ReportError"
 1130 LDMFD R13!,{R0-R2,R15}
 1140 :
 1150 .Redraw_Window_Request
 1160 STMFD R13!,{R0-R12,R14}:MOV q,R0
 1170 MOV R1,q:SWI "Wimp_RedrawWindow"
 1180 MOV R11,R0
 1190 .Redraw_while
 1200 TEQ R11,#0:BEQ Redraw_endwhile
 1210 LDR R0,[q,#28]:LDR R1,[q,#4]
 1220 LDR R2,[q,#20]:SUB R7,R1,R2
 1230 RSB R7,R7,R0:LDR R0,[q,#36]
 1240 SUB R6,R1,R2:RSB R6,R6,R0
 1250 MOV R0,#0:SWI "Wimp_SetColour"
 1260 MOV R0,#96+4:LDR R1,[q,#4]
 1270 ADD R1,R1,#22:LDR R2,[q,#8]
 1280 ADD R2,R2,#4:SWI "OS_Plot"
 1290 MOV R0,#96+1:MOV R1,#512
 1300 ADD R1,R1,#202:MOV R2,#88
 1310 SWI "OS_Plot":MOV R0,#7
 1320 SWI "Wimp_SetColour":MOV R5,#0
 1330 MOV R10,#0
 1340 .Redraw_loop1
 1350 ADD x,R5,#22:SUB R0,x,#34
 1360 ADD R1,x,#34:CMP R7,R1
 1370 BGT Redraw_jump1:CMP R0,R6
 1380 BGT Redraw_jump1:MOV R0,#4
 1390 LDR R1,[q,#4]:ADD R1,R1,x
 1400 LDR R2,[q,#8]:ADD R2,R2,#4
 1410 SWI "OS_Plot":MOV R0,#1
 1420 MOV R1,#34:MOV R2,#0
```

Continued on page 61

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ShowPage

Alan Wrigley looks at CC's PostScript interpreter.

Computer Concepts' *ShowPage* describes itself as a PostScript compatible interpreter, which can output any PostScript file to the screen, to any printer (including non-PostScript types), or as a sprite. It also claims to be useful as a tutorial package if you wish to learn about PostScript.

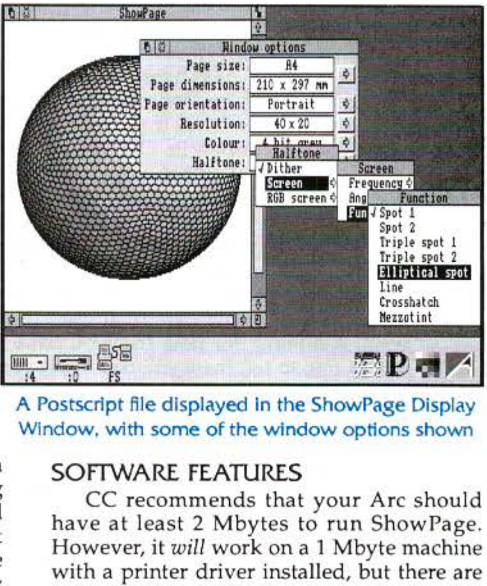
WHY POSTSCRIPT?

PostScript was developed by Adobe Systems Inc., and in a fairly short time has established itself as an industry standard. It is known as a page description language; in other words, a computer language whose purpose is to define the display of graphic information on a page. It is an interpreted language, in just the same way as Basic, so every PostScript printer contains an interpreter as part of its controlling software. A brief description of PostScript was given in *Introducing Laser Printers* (RISC User Volume 3 Issue 1).

The standard nature of PostScript means that, in theory, a PostScript file produced on any computer can be printed on any PostScript printer, which is a substantial aid to portability between systems. More significantly, from the point of view of those who require professional printing jobs to be done, many commercial printers now accept PostScript files which are transferred directly to the typesetting machinery. This allows copy to be generated in-house by a DTP package, and sent straight to the printers on disc without the need for paste-ups and camera-ready artwork.

THE PACKAGE

ShowPage consists of one disc, a 60-page A5 manual, and two reference books on PostScript. These are standard works produced by Adobe and known as the Red Book and the Blue Book, more properly the *PostScript Language Reference Manual* and the *PostScript Language Tutorial & Cookbook* respectively. A further work, the Green Book which is concerned with program design, is not supplied with the package but should be available elsewhere. The disc contains the ShowPage application itself, a number of demo PostScript files, and three of CC's fonts thrown in for good measure (AvantG, BookM and Pembroke). The ShowPage manual was produced entirely on the Archimedes using CC's own products, and is an excellent example of the professional results which can be achieved with this machine.



Page size: A4
Page dimensions: 210 x 297 mm
Page orientation: Portrait
Resolution: 40 x 20
Colour: 4 bit grey
Halftone:

A Postscript file displayed in the ShowPage Display Window, with some of the window options shown

SOFTWARE FEATURES

CC recommends that your Arc should have at least 2 Mbytes to run ShowPage. However, it *will* work on a 1 Mbyte machine with a printer driver installed, but there are some facilities which require more memory and would therefore be difficult or impossible to use on a basic machine, as you will see later. Also, if you have more memory available you can alter certain defaults to obtain larger caches for characters and fonts, which will cut down on disc accesses.

As you would expect, the application is fully RISC OS compliant, and installs itself on the icon bar as normal. Using the program is simplicity itself, and each and every operation is fully described in the manual with a clarity sadly lacking from many software manuals. Before running ShowPage, you may need to customise certain features to suit your system or requirements. In particular, the FontSetup file may well need to be altered. This is the file which tells ShowPage which fonts you have installed, and their PostScript equivalents. For example, Helvetica is a standard PostScript font, but ShowPage will be unaware that BEEBUG's SwissB or Acorn's Homerton are its equivalents unless the FontSetup file shows this. Full details on how to do this are given in the manual.

To use ShowPage, you simply drop a PostScript file onto its icon. If the file has a PostScript filetype FF5 (which it will have in any case if it has been produced by PrinterPS), it can be loaded into ShowPage just by double-clicking on its icon. ShowPage will open its Display Window, from whose menu all options governing the display of the image are selected. What happens next depends on whether the currently selected output is to screen or printer. This can be chosen from a menu option, and the default on start-up is to screen, though this can be altered if you wish. Assuming for now that you have the screen option set, there will be a short pause while the PostScript program is interpreted, and then the first page is displayed in the window exactly as it would appear on the printed page. If it is a multi-page document an option allows you to continue to the next page when you wish.

Various parameters can be set from menu options which determine exactly how the image will appear. These include page size (a full range including A and B sizes and a number of others such as Legal, Quarto and so on), orientation (portrait or landscape), resolution, colour, and halftone representation (e.g. dithering, or various types of screening such as spot or crosshatch). You can also select one of several palettes, ranging from black-and-white to 8-bit colour. CC provides two palettes which give a better range of colours or shades than the standard palettes. What finally appears in the window is a sprite, the characteristics of which are determined by these parameters. The greater the resolution, the greater the size of the sprite, but more memory is needed, which may be difficult on a 1Mbyte computer. This sprite can later be saved to disc or exported into other applications.

Once a page is in memory, it can be scaled by any percentage from 1% to 800%. The rescaled image is immediately displayed in the window. However, this does not alter the resolution or memory requirements of the image, which is fixed when the page is read in, but only the apparent size on screen.

With output set to printer, a similar set of options governs the display of the image, but this time it is sent to the currently installed printer driver. A similar set of halftone functions is available, and also (bad news again for 1 Mbyte owners) the processing time can be reduced by allocating more memory for the printer bit map. For colour images, a Cyan-Magenta-Yellow-Black model is used in preference to RGB: this separates the colours into the four elements normally used for colour separations in printing.

So much for the Display Window. The other main feature of ShowPage is its Text Window, which can be opened from the icon bar menu. This is used to display any errors which are generated when interpreting a program, and thus can be very useful for debugging PostScript programs. It also has an Executive mode, which can be used to enter PostScript commands directly, or to display a program character by character as it is interpreted, with immediate reporting of errors. These facilities are very useful if you are actually writing PostScript programs, or you want to learn about the language. However, under some circumstances the Executive mode may require more memory than is available on a 1 Mbyte machine.

SHOWPAGE IN USE

To put ShowPage through its paces I experimented with a number of the supplied demo files, and also used a standard Draw file to make a triple comparison: the output from ShowPage to a dot matrix printer (via a PostScript file prepared with PrinterPS), the same file printed directly to the dot matrix from Draw, and the direct output from PrinterPS to a PostScript printer. When using ShowPage it is important to remember that screen output and printer output are two separate operations. To change from one to the other you must erase the page in memory and re-interpret the program. This is quite necessary, since what is in memory is neither a virtual image nor a PostScript program, but simply the sprite which was created from it. This also means that the appearance of the image on screen will not necessarily reflect the exact detail of the printed image, but simply an approximate representation of it. This is particularly noticeable when using fonts, where it requires a high resolution sprite (and consequently a great deal of memory) for the characters to become distinguishable.

Playing around with the various screen display options presented no problems, and using them was simplicity itself, helped by the clarity of the manual. However, when I started trying to print, this is where my problems started. Using ShowPage to print to a Canon BJ-10e via PrinterDM, I was successful on one occasion, but otherwise all I ended up with was either a blank sheet of paper or a never-ending cycle of incomprehensible errors, such as "Disc full" or the unhelpful "ioerror". I discussed these problems with CC, and we decided that it was insufficient memory in the Arc (though I was using the default ShowPage settings and running it on a 420). However, when I freed more memory and tried again, I still could not get it to work, and eventually gave up, disgruntled. CC has promised to investigate.

On the one occasion when I managed to print something from ShowPage, the quality was high, and virtually indistinguishable from the direct printouts. However, examination showed that the ShowPage printout elongated the image by a small but noticeable amount. The result was that a file which filled the page when printed directly from PrinterPS or PrinterDM, overran the page when printed from ShowPage - hardly what you want when part of the purpose of the program is to allow you to output PostScript files to any printer.

As a result of the problems, I was unable to put ShowPage fully through its paces. For example, I could not check how well it coped with 90-degree rotation of fonts on the printout.

CONCLUSIONS

In terms of price, ShowPage is something of a heavyweight (though the inclusion of the Adobe manuals has obviously upped the price somewhat). However, it is a complex and powerful piece of software, and if you need its facilities, it should do a good job for you. However, the printing problems *definitely* need some attention, and we will keep you informed on this particular point. So who might need it? If you have access to PostScript files, perhaps from a PC or other system, and you wish to print them on your own, non-PostScript printer, or if you want to write your own PostScript programs or learn the language, then ShowPage is ideal. You might also consider it useful for experimenting with graphics output without needing to waste a sheet of paper each time you want to see how your image will appear - though unless you are writing your own PostScript programs this will involve outputting the image from the host application to a file via PrinterPS, then loading the file into ShowPage to be re-interpreted, each and every time you want to alter the final appearance. Unfortunately for the forests, most busy people, for whom time is money, will choose to waste the paper instead.

Product	*ShowPage*
Supplier	*Computer Concepts Gaddesden Place, Hemel Hempstead, Herts HP2 6EX. Tel. (0442) 63933*
Price	*£175.07 inc. VAT*

New Releases

June 1991

GRAPHICS

PD33 Disc

Contains a program that displays several still and animated ray-traced pictures.

MUSIC

PD07 Disc

Contains Soundtracker playroutine plus the following tunes: MyWay, Nothing-2, Oooerr, Outrun, Pacman, Pat,PetShop, Pretend, SaySaySay2, Steeve

TRICKS AND NOVELTIES

PD32 Disc

Contains an application called Cookie. When run, it puts up a window containing a 'fortune cookie' or a well-known saying or piece of philosophy. Be warned! This program is very addictive once seen, also rather zany not to mention, occasionally saucy! There are some 6000 sayings. Also on this disc is a scrolling text demo with soundtrack music called Invade that also features a space invaders game within it.

UTILITIES

PD31 Disc

Contains 17 utilities and applications. There is plenty on this disc to choose from and should find favour with most people. Brief descriptions of the list is as follows: Address Book, Address Labeller, Disc Space Display. Desktop Calendar, Cassette Inlay Printer (Two of these!), DFS Disc Reader, Automatic Application Creator, Arc to Psion Transfer, ROM Speed-Up, STD Codefinder, System Utilities, Trash Can, Front end for Twin, Front end for View, Volume Controller, Control of Pointer by keys.

FONTS

PD35 Disc

Contains ten PD outline fonts for use in RISC OS applications such as WP and DTP.

COMMS

PD34 Disc

Contains Arcterm3, a full comms software package. Arc100, a scrolling text terminal. Grapevine, another scrolling text terminal but multi-tasking. TaskData, a multi-tasking viewdata comms package. Download, an application for transferring files between machines via serial port. Timer, a utility for recording on-line time and call cost. The latest version of Sparkplug, the file decompression program. Along with these is a complete set of programs for running a bulletin board system on your Archimedes.

Beebug

DEMOS

PD12Disc

Contains 5 sound and graphics demos from Hugo Fiennes of the Serial Port. All five are stunning examples of what the Arc is capable of.

PD21 Disc

Contains three demos, Balls, Balls2 and BIA-Tetris. The latter is a game as well as a demo.

PD22 Disc

Contains three demos, Noah, Chips and Demo01.

PD23 Disc

Contains four demos, Bounce, Crimbo, ColDemo and Rotate.

PD24 Disc

Contains three demos, Demo, Gopher and Overscan.

PD25 Disc

Contains four demos, Deskballs, DudsDemo, EgIntro, and Z-Brother.

PD 26 Disc

Contains three demos, Sister, Wibble and SkullDemo.

PD27 Disc

Contains two demos, GrannyChow and Windows.

GRAPHICS

PD13 Disc

Contains the !Projector application that displays films created with the Ace Computing Mogul package. Six example films are included.

PD18 Disc

Contains a program that displays several still and animated ray traced pictures.

EDUCATION

PD14 Disc

Contains REG, a suite of programs for recording student achievement levels in schools. Also, included is a way of recording attainment with Colton Software's Pipedream.

ART

PD15 Disc

Contains Arctist+ and BigM, both 256 colour art packages, along with Design, a symmetrical pattern designer.

MUSIC

PD01 Disc

Contains Soundtracker playroutine plus the following tunes: Aces-Hi, Acidbat2, Afl, Alf, ArtNoise, AxelF, Backpopped, Big, Blitzwing, Blizzard02.

PD02 Disc

Contains Soundtracker playroutine plus the following tunes: BatMix, Bobby, Brill, Burning, Chartmix, Chipgene, Demo2.

PD03Disc

Contains Soundtracker playroutine plus the following tunes: Confusion, Crack, Criminal, Dear, Demons, Dns, Elephant.

Public Domain Discs

PD04 Disc

Contains Soundtracker playroutine plus the following tunes: Doc12, Funky, Ducksong, Electric_2, EndTheme, Enutomed, Equinoxe5, FinalTFDMI, FinalVis.

PD05 Disc

Contains Soundtracker playroutine plus the following tunes: Fyc, GoodTune, Hello, HowDeepIs, Huba, Humanoid, Hunters, Hymn, Idea, Igarun, IntoB.

PD06 Disc

Contains Soundtracker playroutine plus the following tunes: Jazzid, Jmj_China, LastNinja2, Like, Magnetic4, MegaForce0, Minimize, Mod, New_Biz.

PD16 Disc

Contains 230 tunes for loading into the music package Maestro, with enough variety to suit most tastes.

GAMES

PD19 Disc

Contains 10 games programs, Adevnture, Battle, Battleships, Connect4, Darts, Fish (Pelmanism), Fruit Machine, Golf, Hangman and Impact.

PD20 Disc

Contains 12 games programs, Invaders, Line Of Five, Othello, Pelmanism,Rocks, Rubik Cube, Simon, Solitaire, Star Trek, Tetris, Tile Trial and Yahtzee.

Public Domain Sampler Disc (PDS1)

Ccontains sample programs from the Beebug Public Domain Software Library.

SOUNDTRACKER

The Soundtracker application is used to play back a music file ***Toccata*** made of real sampled sounds which are sequenced to form a complete tune lasting several minutes. The quality of this is quite stunning, particularly if played through the computer's monitor speaker, or a hi-fi system.

ACCOUNTS

This is a home accounts program. There are no instructions included with the program but all functions are selected from the main menu which is self explanatory. An example file is included.

SC LABEL

A versatile disc labelling program producing professional looking labels for 3.5" discs. A Help file is included with the program.

FOLLOW

A novelty program that when run puts a pair of beady eyes on the Desktop which follow the mouse pointer wherever it goes. Eerie!

HANGMAN

A well presented and implemented version of the old word game of Hangman with an animated finale.

MULTIPRINT

A utility to allow the printing of files by creating a task list of the files to print before sending them to the printer. A Help file is included within the program.

ROTATE

A fascinating animated demo in which you can alter the effects by pressing a few keys on the keyboard.

STD

A useful utility to search for telephone STD codes or find a town from its STD code. A ReadMe file is included in the program.

WANDA

A novelty demo program that infests your desktop screen with a shoal of bubble-blowing goldfish!

This month we are offering 6 new discs from our Public Domain Library. Further titles will be added in the future.

We also offer a **Sampler** disc with a selection of public domain programs from all areas of interest.

Our Public Domain discs contain as near as possible to 800k (and not less than 700k). Each disc includes a 'Read Me' file, and there are some instructions with the programs.

It is our policy with our Public Domain Library that the Public Domain discs are available only to RISC User members for **£3** (postage is £1 for the first disc and 50p for each additional disc). The discs are offered as seen, and we cannot enter into any discussion regarding their contents.

To order phone **(0727) 40303**,
Fax (0727) 860263,
or write to (quoting your membership number):

BEEBUG, 117 Hatfield Rd, St. Albans,

TRICKS AND NOVELTIES

PD17 Disc

Contains a collection of 27 amusing trick and novelty programs. Some of them produce the weirdest effects!

UTILITIES

PD28 Disc

Contains 20 utilities of various types. These are all extremely good and there is something here no doubt to please everyone. Space does not permit full descriptions but the file list is, 1stFile, ASm2, CloseUp, Crypt, Dir, Display, Drawlink, Dustbin, Filetypes, FileUtils, Find, Keys, Loadprogs, MultiPrint, NewBar, NewCodes, PD_Impress, PrinterTx, ProgCalc, and Set_Type.

CLIPART AND PICTURES

PD29 Disc

Contains over 4 megabytes of Sprite pictures which can be used as clip art to load into DTP or use in your programs. The files are naturally in a compressed form, and the disc contains the file to uncompress them and has instructions.

PD30 Disc

Contains over 2 megabytes of Sprite clip art and Draw files to load into DTP or use in your programs. The files are naturally in a compressed form and the disc contains the file to uncompress them and has instructions.

Using ANSI C

Part 1: The Desktop Environment

by Lee Calcraft

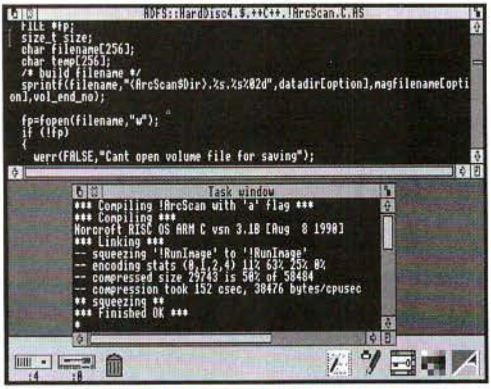
This new series will concentrate on creating Desktop applications in C; and the chief vehicle for this will be Acorn's ANSI C compiler and the excellent supporting library, RISC_OSlib. Users of Beebug's C have an almost equivalent library of functions; though for conciseness we will refer only to the Acorn library.

In this first article, I want to look at the use of the Acorn compiler within the Desktop environment; and comments made here will not be generally applicable to the Beebug compiler, which operates in a different way. We will get down to the serious business of coding in the next issue.

MULTI-TASKING THE COMPILER

If you are developing software for use in the Desktop, it makes sense to use a development system which multi-tasks within the same Desktop environment. Acorn's compiler (in releases 1, 2 and 3), unlike Beebug's, is not multi-tasking, and relies on the notion of a current directory - both of which are hangovers from pre-RISC OS days, and are likely to be remedied in due course. In the meantime we can get around this by the use of some well placed Obey files, and the multi-tasking Task window supplied with Edit.

By using the latter, we can make the compiler multi-task. This has masses of advantages: it means for example that while the compiler is still running we can use Edit to correct the first of the errors signalled as the compiler works through our source code. The only disadvantage is that compilation takes a little longer when in multi-task mode. For example, a piece of code which compiles in around 40 seconds outside the Desktop, might take 45 seconds in multi-task mode. But this is a relatively small overhead, which is more than made up for if you are doing something useful at the Desktop during the compilation process.



```
  FILE *fp;
  size_t size;
  char filename[256];
  char temp[256];
  /* build filename */
  sprintf(filename,"<ArcScan$Dir>.%s.%s%02d",datadir[option],magfilename[opti
on],vol_end_no);

  fp=fopen(filename,"w");
  if (!fp)
  {
    werr(FALSE,"Cant open volume file for saving");
```

```
*** Compiling !ArcScan with 'a' flag ***
*** Compiling ***
Norcroft RISC OS ARM C vsn 3.10 [Aug  8 1990]
*** Linking ***
-- squeezing '!RunImage' to '!RunImage'
-- encoding stats (0,1,2,4) 11% 63% 25% 0%
-- compressed size 29743 is 50% of 58484
-- compression took 152 csec, 38476 bytes/cpusec
** squeezing **
*** Finished OK ***
*
```

Using Acorn's compiler in multi-task mode

Using Edit's Task window to achieve the required result is easy. Just install Edit on the icon bar, click Menu over its icon, and select *Create*, and then *New Task window*. Then enter the commands which call up the compiler, and optionally the linker. When using Edit in this way, there are a couple of points to note. First of all, when the compiler reaches the end of its run, the Task window will forcibly retrieve the caret. So if you are happily editing your source code in Edit as the compilation draws to a close, your Edit window will lose input focus, and anything that you type after this point will eventually appear at the bottom of the Task window.

You can even perform filing operations during compilation, but if you are doing this when the compiler is writing to the object file you can on very rare occasions cause an error to occur, which is signalled by the linker refusing to accept the object file. If this happens, you need to recompile. Incidentally, the Task window also confers a very useful advantage when used with the compiler: it leaves you with a scrollable window showing the complete output from the compiler. Compare this to normal operation when, if you have more than a screenful of errors, you lose sight of the early ones - and usually if you have that many errors, it is the very first error message which points to what has really gone wrong.

One final point on the subject of the Task window: the amount of memory available to the compiler and the linker when running in multi-task mode is that allocated to the Task window when first initialised. This in turn is what was held in the Task Manager's *Next* slot. If this is insufficient, you will get a compiler or link error. To rectify the situation you can use the Task Manager to increase the amount of RAM allocated. But better still, for those source codes which require more than the normal 640K contained in a full *Next* slot, you can issue a call to WimpSlot from within the Task window itself. For example:

```
WimpSlot -min 1024K
CC C.MySource
```

will extend the available RAM to 1 Mbyte before compiling C.MySource.

OBEY FILES FOR COMPILING AND LINKING

It is very tedious to type out all the compile and link commands every time, and a far easier approach is to use customised Obey files with short names. You can go one stage beyond this, and use Make files to automate the process further, but this is probably only worthwhile if you have a large number of source files to manage for any given project. To keep it simple, we will avoid the use of these for the moment.

Listing 1 gives an example of a suitable Obey file. It first sets the wimpslot as described above - but note that you only need to do this if you find that the default 640K is insufficient. Next it echoes a message stating that compiling is in progress, and giving any information about compiler flags that will be set.

It then issues the command to compile. The *-c* option means *compile only* (i.e. don't link as a part of the process). The *-I* flag here specifies two paths which will be used when searching for #include files in the source. One gives the location of the RISC_OSlib directory, and the other a directory which contains additional library functions. If your CLib directory is not in the root directory of your disc, you will also need to include here the path for this vital component. The final flag -fa tells the compiler to report when it thinks that a variable might be used before it has been initialised. This option is certainly not infallible, but any help in identifying such a potentially disastrous situation is always acceptable.

The last three lines of the file make use of the system variable *Sys$ReturnCode* to determine whether the compiler has successfully completed the task or not. A value of zero indicates success, and causes the obey file L to be invoked, which performs the linking process. Otherwise, a high pitched beep is sounded, and a fail message displayed. This ensures that even if you are only half awake, you will be unlikely to think that the compilation has been successful, and mistakenly re-test an earlier compiled version of your task.

The Obey file which performs the linking uses a similar approach (see listing 2). A message is displayed telling you that linking is in progress, then the linker is called. The *-o* option supplies the name of the output file - *!RunImage* in this case, while the four following strings are the names of object files to be included in the linking process. The first is the main object file for the task, the second is a small piece of code and data which interfaces to the shared C library. Finally, the filenames for the object code for RISC_OSlib, and the user's function library are given.

The next line in the listing conditionally squeezes the resultant !RunImage file, and will typically save around 50% of disc storage. The squeezed file contains its own code to re-expand it once it is run, and the expansion process is typically faster than the extra time it would have taken a hard disc to read the uncompressed file. But the squeezing process takes a few seconds, so it is only worth incorporating this line when producing a final version of your software.

The last three lines provide a success or fail message, and an accompanying audible cue in the form of a high pitched beep for a failure, or a low pitched beep for a success. If the failure only occurs during linking, the fact that we have used separate compile and link Obey files means that we can re-link without re-compiling.

A BOOT SEQUENCE FOR SETTING UP

Obey files can also be very useful in setting up your system for a C coding session. The main purpose of such a file might be to install the Clib and FPEmulator modules, select the appropriate current directory, install debugging applications such as the Wimp Debugger (see the article *Debugging the Wimp* elsewhere in this issue), open a Filer window on the directory containing the C application under development, and finally load its source code into Edit.

To achieve all this you will actually need a combination of two files, the second being a plain text file called by the Desktop command in the first. A typical sequence of commands for the first file is given in listing 3, and this could form a part of an initial boot file. The last command engages the Desktop, and calls the second file. This latter appears in listing 4. It first installs the Dustbin and the Debugger. Then it loads up Edit with the appropriate source code. Finally it opens two Filer windows (note that these will be stacked in reverse order on the Desktop).

By adopting a similar approach you can automate the setting up of your system for a C session, and by using a similar technique to that suggested in the earlier part of this article you can compile and test C programs effortlessly within the Desktop. Next month we will begin to look at the way in which Desktop applications are constructed - a task which Acorn's excellent RISC_OSlib library makes relatively easy.

Listing 1. Command script for compiling !MyApp

```
*| Command script for compiling !MyApp
*|
wimpslot -min 1024k
echo *** Compiling !MyApp with 'a' flag
***
cc -c MyApp -Iadfs::HardDisc4.$.Cdir.RIS
C_OSLib,adfs::HardDisc4.$.Cdir.Func_Libs
-fa
IF sys$returncode<>0 then sound 1 &FFF1
200 4
If sys$ReturnCode<>0 then echo !!! Finis
hed FAILED !!!
If sys$returncode=0 then L
```

Listing 2. Command script for linking !MyApp

```
*| Command script for linking !MyApp
*|
if sys$returnCode = 0 then echo *** Link
ing !MyApp ***
```

```
if sys$returnCode = 0 then link -o !RunI
mage o.MyApp adfs::HardDisc4.$.CLib.o.St
ubs adfs::HardDisc4.$.Cdir.RISC_OSLib.o.
RISC_OSLib adfs::HardDisc4.$.Cdir.Func_L
ibs.o.FL1
if sys$ReturnCode=0 then Squeeze -v !Run
Image
if sys$returncode=0 then sound 1 &FFF1 7
0 4 else sound 1 &FFF1 200 10
if sys$ReturnCode=0 then echo *** Finish
ed OK ***
if sys$ReturnCode<>0 then echo !!! Finis
hed FAILED !!!
```

Listing 3. Part of C boot sequence

```
run adfs::HardDisc4.!System
RMload adfs::HardDisc4.$.!System.Modules
.Clib
RMload adfs::HardDisc4.$.!System.Modules
.FPEmulator
DIR adfs::HardDisc4.$.Cdir.!MyApp
Desktop -FILE adfs::HardDisc4.$.Library.
DeskStrtUp
```

Listing 4. Second part of C boot sequence

```
*| >$.Library.DeskStrtup
*| must be a plain text file
*|
run adfs::HardDisc4.!DeskApps.!Dustbin
run adfs::HardDisc4.$.!Debug
run adfs::HardDisc4.$.!Edit adfs::HardDi
sc4.$.Cdir.!MyApp.C.MyApp
Filer_OpenDir adfs::HardDisc4.$.Cdir
Filer_OpenDir adfs::HardDisc4.$
```

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South Wirral L64 1SD. Tel. 051 327 4268.

FastWipe

This utility by Glynn Clements enables you to wipe a floppy disc very quickly.

Using the routines provided within RISC OS, there are normally three ways to delete all the files from a previously used disc. Firstly, you can either select all the items in the root directory using the Desktop Filer, and then choose the *Delete* option from the *Selection* sub-menu. Secondly you can press F12 to reach the command line, and then use the **Wipe* command to perform the same action. Thirdly, you can simply re-format the disc.

Each of these methods has drawbacks. Deleting the files using the Filer or *Wipe is fairly fast, but if any objects are locked, then these will not be deleted unless the F(orce) option is set in *Wipe$Options*, or unless you unlock the objects first (which may involve traversing the directory structure to a much lower level). Also, when using *Wipe you must be very careful to specify the disc to be wiped - a moment's carelessness could wipe your entire hard disc. As for formatting, this is of course very slow, though it does have the advantage that all the information is physically removed from the disc, as opposed to the other methods which simply update the catalogue, but leave the disc name and the boot option intact.

FAST DISC WIPING

Now a fourth method is available, which is extremely quick and suffers from few of the drawbacks. The *FastWipe* utility presented here will wipe a floppy disc in drive 0 in a couple of seconds. It can either be run as a utility, which means you can call it from the command line or from within Basic if required, or it can be incorporated into an application which will run from the Desktop.

Listing 1 contains the source code, which assembles a machine code program. Type in the listing carefully and save it as *Wipe0Src*. Running the source program will assemble the code and save it automatically as *Wipe0* with the filetype &FFC (Utility).

USING FASTWIPE

Provided that *Wipe0* is in the library directory or the CSD, then simply typing **Wipe0* will run it. It can also be run by double-clicking on its icon in a Desktop directory viewer. A prompt is displayed before the disc is actually wiped, so that if, for example, you have a single floppy machine, you can run the utility from one disc and insert another disc to be wiped at the prompt.

An alternative way to run the utility would be from an application on the Desktop. This is not really necessary, but does allow you to design a sprite to go with it. Create an application directory called *!FastWipe*, and place within it the *Wipe0* utility, a *!Run* file, and a *!Sprites* file if you wish it to have its own sprite. *!Run* should be an Obey file containing the following line:

```
Run <Obey$Dir>.Wipe0
```

PROGRAM DETAILS

The program works by using the SWI call "FileCore_FloppyStructure" (PRM page 1022) to generate the root directory and map structure for a floppy disc, and then writing these to the first four sectors of the floppy in drive 0 with ADFS_DiscOp. The disc thus appears to the Filer exactly like a freshly-formatted one, complete with a new disc name based on the current date and time as normal. The disc is mapped to E format, and so the utility can only be used with discs which were previously D or E format.

Note that, although the wiped disc may appear just like a freshly-formatted one, the program cannot be used as a quick substitute for formatting an unformatted disc.

```
 10 REM           >Wipe0Src
 20 REM Program   Fast floppy wipe
 30 REM Version   A1.0
 40 REM Author    Glynn Clements
 50 REM RISC User June 1991
 60 REM Program   subject to copyright
 70 :
 80 DIM code% 1024
 90 FOR opt%=0 TO 2 STEP 2
100 P%=code%
110 :
120 [OPT opt%
130 :
140 ADR r0,warning
150 SWI "XOS_Write0"
160 SWIVC "XOS_Confirm"
170 SWIVC "XOS_WriteC"
180 SWIVC "XOS_NewLine"
190 MOVVS PC,r14
200 CMP r0,#ASC("y")
210 MOVNE PC,r14
220 :
230 MOV r0,#6
240 MOV r3,#4096
250 SWI "XOS_Module"
260 MOVVS PC,r14
270 STR r2,[r12,#0]
280 :
290 ADD r1,r12,#4
300 MOV r0,#3
310 STR r0,[r1,#0]
320 MOV r0,#14
330 SWI "XOS_Word"
340 BVS exit
350 :
360 LDR r0,[r1,#0]
370 STR r0,id
380 :
390 MOV r0,r1
400 ADR r1,name
410 MOV r2,#11
420 ADR r3,format
430 SWI "XOS_ConvertDateAndTime"
440 BVS exit
450 :
460 LDR r0,[r12,#0]
470 ADR r1,rec
480 MOV r2,#0
490 ADR r3,defects
500 SWI "XFileCore_FloppyStructure"
510 BVS exit
520 :
530 MOV r1,#2
540 MOV r2,#0
550 LDR r3,[r12,#0]
560 MOV r4,#4096
570 SWI "XADFS_DiscOp"
580 :
590 .exit
600 MOV r1,PC
610 AND r1,r1,#1<<28
620 ORRVS r14,r14,r1
630 STMFD r13!,{r0,r14}
640 :
650 MOV r0,#7
660 LDR r2,[r12,#0]
670 SWI "XOS_Module"
680 :
690 LDMFD r13!,{r0,PC}^
700 :
710 .warning
720 EQUS "Are you sure (Y/N) ?"
730 EQUB 0
740 :
750 .format
760 EQUS "%24_%mi_%w3"
770 EQUB 0
780 ALIGN
790 :
800 .defects
810 EQUD &20000000
820 :
830 .rec
840 EQUD &0202050A
850 EQUD &0001070F
860 EQUD &05200100
870 EQUD &00000203
880 EQUD &000C8000
890 .id
900 EQUW 0
910 .name
920 EQUS "0123456789"
930 EQUS STRING$(32,CHR$(0))
940 ]
950 NEXT opt%
960 SYS "OS_File",10,"Wipe0",&FFC,,cod
e%,P%
970 END
```

Archimedes Software

Disc 7 - A Chess Program for The Archimedes.

A Chess program that takes full advantage of RISC OS, installing itself on the icon bar and running on the desktop in a window at the same time as other applications. You can carry on working whilst the program is thinking of its move. Features: load and save games, edit board, step backwards and forwards through game, computer 'v' computer mode, play black or white, reverse board, save game. multiple levels, print game. Algebraic notation. Full mouse control, on screen clocks. Hint. Choice of piece when promoting pawn. Undo move.

Disc 16 - A New Spark RISC OS Archive program

Spark, allows you to store files and directories in archive files in a very compressed form. e.g. sprites often take up only 10% of normal space. Files in archives, can be accessed just like files in disc directories. Now new Spark series 2.XX, has lots more features. Background operation - archive whilst you do something else. Reads all these formats, zoo, zip, lzh, UNIX and Archie Tar, Compress. Reads and writes PKarc, SEA/PC arc, uucode, atob/CET+, FCET and Archimedes archives. New 16 bit higher performance compression. Script files, message driven operation. DES data encryption. Full info, sort by type etc.

Disc 22 - Novapaint 16 colour paint package.

Paint package with two tone font system. user defined brushes, airbrush, auto-shader, colour fills. define graduated palettes. pixel average, area squash/stretch/distort/rotate. sphere wrap, cylinder wrap. Online help, manual, demos.

Disc 24 - RISC OS Desktop Multitasking Terminals

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Disc 10	More C Tools. yacc and lex with examples and C source.
Disc 19	Starchart. RISC OS program to make Draw file starmaps. Catalog of 9000 stars.
Disc 30	XLIB. Library of extensions for Pascal. Interface to wimps etc. Lots of Pascal progs.
Disc 31	PipeDream Extras. 250,000 word US English dictionary, Printer buffer, and autosave (automatically saves documents every so often). Needs hard disc for dictionary.

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Pack #2:	Assorted cartoon characters. Escher, Flowers, Foods, Miscellanea.
Pack #3:	Music, Monsters, Mythical and religious beasts. People (assorted people plus celebrities). Space, space-travel, and space exploration.
Pack #4:	Heads, Christmas/Easter, Transport - cars, boats, trains, planes. Logos+icons.
Pack #5:	Victorian woodcuts. Whimsy - cute pictures. All sorts of sports.

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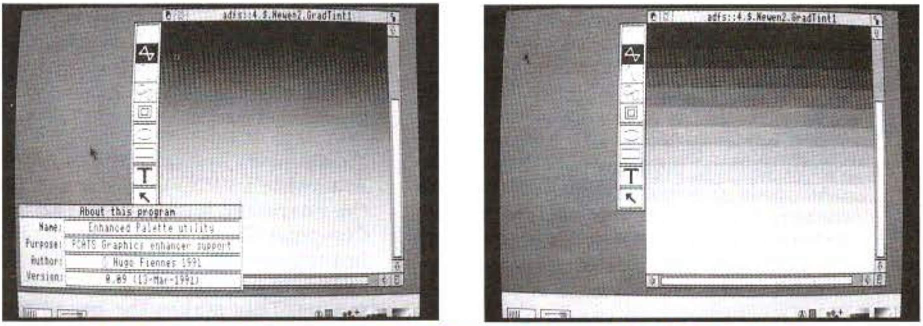
PCATS Graphics Enhancer —

David Reid reviews a new video board which provides significant extensions to the Arc's graphics capability.

One of the few limiting factors in the original design of the Archimedes was its video output capability. Although a very respectable screen resolution can be obtained with the standard VIDC chip, the colour palette will only allow 256 of the 4096 colours to be selected. The trade-off between screen resolution, number of colours and machine speed is well known to Arc users. The PCATS Graphics Enhancer board, designed by Patrick Arnold and marketed by the Serial Port, adds a significant number of new features to the existing video capability. These enhancements provide more palette entries, more colours on screen, greater resolution, more modes and extra controlling software. These additional features and a 20" colour multi-sync monitor could make the Archimedes into a serious competitor in the Computer Aided Design (CAD) field. However, many of the facilities of the board are of equal value to users with standard monitors.



About this program

Name: Enhanced Palette utility
Purpose: PCATS Graphics enhancer support
Author: © Hugo Fiennes 1991
Version: 0.09 (13-Mar-1991)

A grey scale reproduced on screen both with and without the Graphics Enhancer (left and right respectively)

The Graphics Enhancer is a single width podule for A300/400/500 series machines. It can also be installed in an A3000 but requires an additional VIDC connector which clips over the chip on the motherboard and costs an extra £10.00. The Serial Port offers a fitting service (collection, fitting and return carriage is included in the price), which it claims will take 2 to 3 days. The instructions included with the board are sufficient to enable a competent user to fit it, but it does require soldering to the main circuit board.

The review board arrived in a well packed box and inside an anti-static protection bag. The review version did not have a User Manual as this was not yet ready, but a copy of the Programmer's Manual was supplied, which I considered to be superb, concise and easy to follow. It certainly rivals the PRM in its depth of information. The podule is well constructed and looks very professional. The only problem I discovered was that the lead to my multi-sync did not fit too well into the 9-pin D socket. After speaking to the designer I found out that an old American 9-pin socket had been fitted to the card, but I was assured that all cards being shipped are fitted with new European sockets which are a much better fit for the cable.

THE PALETTE

The Graphics Enhancer can be set up with a 24-bit palette which will allow any 256 colours on screen simultaneously from an incredible 16,777,216 colours available from the new Hitachi palette control chip on the board. If required, this can provide a screen resolution of up to 768 by 288 pixels on the standard Philips 8833 colour monitor (the list of new modes in Table 1 shows which can be used with the 24-bit palette). To cope with this new palette the Serial Port provides a new copy of the ColourTrans module which allows correctly written Desktop applications to function properly.

Though some of the screen resolutions look relatively low, with a 24-bit palette the perceived resolution appears much higher and the results are quite effective. The software provided has some sample images, and there is a proliferation of suitable images available from most bulletin boards and PD libraries. Note that only the palette is 24 bits and not the pixel bit depth which is still a maximum of 8 bits, thus providing any 256 colours from the extensive palette range. It is easiest to think of it in the following terms: effectively the video palette is a large array and each pixel can access any one of 256 locations in the table (because each pixel is only 8 bits deep), but the palette array location accessed can hold any colour value in the range of 0 to 16 Meg.

MORE SCREEN COLOURS

The standard VIDC chip provides 4 bits of data per colour channel (Red, Green, and Blue), and a supremacy bit for overlay and genlocking. This makes 13 bits of video data in total. But the palette is limited to a choice of only 256 colours on the screen at one time. The Graphics Enhancer also has a 4 bit per colour channel mode called '12 bit direct DAC mode' (3 colours x 4 bits = 12 bits), and running the board in this mode will allow 4096 colours to be displayed simultaneously on the screen. This means much smoother shading can be achieved and a more accurate colour reproduction can be displayed. Unfortunately, though, this mode is not Desktop compatible. In this 12 bit DAC mode the board can produce resolutions of 512 by 288 pixels on a standard colour monitor and up to 554 by 328 with a multi-sync connected. If you really want smooth shading, the graphics board can be set up into its '16 bit direct DAC mode' (again, not Desktop compatible). This will provide a truly spectacular image with 65535 colours on the screen at one time. The effects produced using this mode have to be experienced to be believed.

The bad news, as indicated above, is that these modes are not completely Desktop compatible and would require some programming ability to make the best use of their capabilities. Though the Desktop will run in these modes, it produces some very amusing colour combinations on screen. Having said that, the Programmer's Manual does provide very comprehensive information.

MORE MODES AND GREATER RESOLUTION

The software provides a plethora of star commands to control the card. For example, you can load and save the extended palette, load and save CLEAR format files, reprogram the VIDC chip, select how many bits per pixel, set up a greyscale and even set the frequency at which the VIDC clock will run. There is a choice of 7 hardware controlled VIDC clocks, but only 4 are fitted as standard. This means there is a multitude of new video modes with differing resolutions and machine speed overheads. The Serial Port provides a comprehensive three-page table at the back of the manual which includes all the registered modes and their respective speed overheads on the system. Any other clock frequencies you might want to experiment with can be provided at a nominal cost by the supplier.

As well as all the modes that Atomwide's VIDC Enhancer can produce, the board can support the full range of Computer Concepts' modes supplied with Impression, the new Super-VGA modes available on the 540, and 14 brand new modes. This makes the board the most flexible upgrade to date for graphics output on Acorn's full range of RISC machines. Table 1 gives a list of the 14 new modes and their respective resolutions. Note that mode 127 is not guaranteed as the VIDC clock speed must be increased to 40 MHz.

NEW SOFTWARE FUNCTIONS

Apart from all the new video modes described above, the software provides an

	Resolution			
Mode	Horizontal	Vertical	Monitor type	24-bit palette
103	512	512	Multi-sync	Yes
115	640	256	Normal	Yes
116	640	288	Normal	Yes
117	768	288	Normal	Yes
118	832	328	Multi-sync	Yes
119	512	288	Normal	No
120	384	288	Normal	No
121	554	328	Multi-sync	No
122	416	328	Multi-sync	No
123	280	288	Normal	No
124	1536	288	Normal	No
125	1664	328	Multi-sync	No
126	640	480	Multi-sync	Yes
127	640	512	Multi-sync	Yes

Table 1. The 14 new modes provided by the PCATS board

extensive library of SWI calls and star commands aimed at developers and interested programmers. There are also some neat applications provided, including a Desktop Palette Utility with which you can set the 16 desktop colours, 8 anti-alias grey scales, the mouse pointer colours and the remaining 228 colours. This I found very easy to use, once an understanding of the functions of the extended palette had been grasped. I am told that the User's Manual will contain details of how to use the extended palettes and give the reader an understanding of the real power of the Graphics Enhancer.

Using the Graphics Enhancer from the Desktop is very easy - you simply click Menu on the palette icon, slide sideways into the *Modes* sub-menu and type in the mode number you wish to select. Playing with the colours in the new palette is made much easier with the Desktop Palette Utility, but they can also be programmed in Basic using the standard commands.(e.g. GCOL). One of the most worthwhile uses of the board with the Desktop would be to have a true 256 grey scale for use with a DTP package etc.

I only discovered one major bug with the board installed. I was running it in mode 126 (640 x 480) and my copy of Acorn DTP kept crashing and aborting the program. This was traced to ADTP, which appears not to access ColourTrans legally. The Serial Port is currently working on ways to overcome this, but stresses that any legally written software should work perfectly.

CONCLUSIONS

Considering what is provided, the price of the Graphics Enhancer is very reasonable, though a multi-sync monitor would certainly help you to exploit its power. The Serial Port is producing a professional version of the card which will be priced to match its greater functionality. One of the extra features will be full genlocking capability with the ability to choose any of the 256 desktop colours to be tagged as transparent or shadow-key. This product should certainly be a success in the field of video titling.

Quite a few of the major software houses are now developing applications to take advantage of this new graphics board. For example, Clares' new art package, Illusionist, will be able to make use of it. One of the greatest uses I have found for the board is to use some of the higher resolution Desktop compatible modes such as 102 to allow me to view large images in high quality. Most of these images are available in GIF, TIFF or CLEAR format and using Translator (which is supplied with the product) these can be viewed in much more detail than in the normal modes.

If you have a need for more colours and higher screen resolution than is normally available on the Archimedes then the Graphics Enhancer can offer all this and more. It is inexpensive enough for most pockets and suitable enough for most applications. In the 12 bit and 16 bit modes, if you do a lot of work with images and/or graphics, then this board will also suit your requirements. Professional graphics quality at a home-user price is very rare these days, and in my opinion this board provides good value for money.

Product	*PCATS Graphic Enhancer*
Supplier	*The Serial Port* *Burcott Manor,* *Wells, Somerset BA5 1NH.* *tel. (0243) 531194*
Price	*£210.32 inc. VAT* *(£222.07 for A3000)*

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Going International (Part 1)

Explore the undocumented potential of your keyboard, and the international keyboard module with Bill Hine.

If you ever use a word processor to write in a foreign language you may have been tempted to make use of the *Country instruction to obtain those troublesome accented letters (see International Character Sets by Alan Wrigley, RISC User Volume 3, Issue 10, page 21). If so, like me, you have probably been frustrated, and ended up either using Acorn's !Chars application (supplied with 1st Word Plus) or the Alt-character-number method, neither of which is very convenient.

The problem is that many of the details of the features of the international keyboard module are undocumented. In this month's article, I intend to explore the international module, and next month I shall suggest an alternative method of programming accented characters into the keyboard.

KEYBOARD HANDLERS AND ALPHABET TABLES

What happens between your pressing a key on the keyboard and a character appearing on the screen? This is a complex process, but in simple terms, there are three steps. Firstly, each physical key (including Esc, Break, the six Shift, Ctrl and Alt keys, the function keys, the keypad keys, etc.) generates a different internal key number or key-code in the range 0 to 124. These key-codes relate directly to the negative INKEY numbers in Basic.

The second step is for the computer to interpret these internal key numbers. The interpretation is performed by the keyboard handler. Some keys, such as Escape, Break, the mouse buttons, the cursor keys, etc., require special action but, broadly speaking, the key-codes are translated into an ASCII character code. This is not a simple one-to-one correspondence.

Some keys (e.g. Shift, Ctrl, Alt) do not generate codes of their own, but affect the interpretation of another key pressed at the same time; in some circumstances a given ASCII code may only be obtained by pressing as many as four keys simultaneously. Another example is the special method of obtaining an ASCII code directly, by holding down the Alt key while typing in the decimal code on the numeric keypad. In some cases, the interpretation of keys may be varied; e.g. by the OS_Byte 4 command.

Moreover, the layout of character keys may differ from one keyboard handler to another; for example the Y and Z keys are reversed on the German keyboard. The commands:

```
*Country <country name>
```

and:

```
*Keyboard <country name>
```

can be used to select the different keyboard handlers. You can obtain a list of the handlers by entering just:

```
*Countries
```

This produces nineteen different names (in addition to Default). Note that there is no need for a *Keyboards command as there is one keyboard handler per country. Apart from stating that it is possible to load alternative keyboard handler modules, the manuals tell us very little about the detailed effects of issuing, for instance, the *Country Germany command.

But there is still a third step between ASCII code and screen, since a given code can have different interpretations according to the current alphabet. Here the manuals are more helpful. Both the RISC OS User Guide and the Programmer's Reference Manual give a set of tables for the different alphabets (the teletext characters are of course a special case retained only for compatibility with BBC micro and Master mode 7).

In general, it is ASCII codes 128 and above which vary in interpretation according to which alphabet is selected. The command:

```
*Alphabets
```

lists the alphabets available while:

```
*Alphabet <alphabet>
```

and:

```
*Alphabet <country name>
```

make the selection. The difference between the latter two is subtle.

At any one time, the computer has one active keyboard handler and one active alphabet. You can set up the appropriate pair for any given country by using the command *Country <country name>. However, the keyboard handler and alphabet may be independently varied by using *Keyboard <country name> and *Alphabet <alphabet>. For example, if you were writing in Greek (Country Greece) you would need to select Keyboard UK in order to enter a *command. Since you cannot type the command in Greek characters, a special keystroke, Alt- Ctrl-F1, is reserved to enable you to select Keyboard UK. To revert to the Greek keyboard, you could use *Keyboard Greece (see RISC OS User Guide p.439).

EXPLORING KEYBOARDS AND ALPHABETS

The program *XploreKeys* given in listing 1 enables you to explore the effect of these commands further. It displays an empty table of keyboard handlers, ASCII codes and alphabets, and invites you to choose any one keyboard or ALL. Begin by entering ALL and pressing the same key repeatedly (try Y, Z, Q for a start) while the program fills the table; you can of course press any combination of the Shift keys (Shift, Ctrl, Alt) together with the key.

The program takes an appreciable time to complete each row of the table, so do not type ahead. You will see how the same keypress is interpreted by each combination of the different keyboard handlers and alphabets. In each row, the program effectively issues a *Keyboard <country name> command and waits for you to press a key or set of keys. It then displays the ASCII code derived by the selected keyboard handler and, issuing each of the *Alphabet <alphabet> commands in turn, shows the corresponding characters across the rest of the row. It also puts a pair of square brackets to indicate the alphabet which is selected by the *Country <country name> command for that row.

You may notice that some of the alphabets are never used, whichever country is selected. Try each of the non-alphanumeric keys; this is where the interesting discoveries lurk. There may be rows when nothing happens at all; this means that the key(s) pressed do not generate a character in that keyboard. Press space to complete the row and carry on with the original key set for the next row.

Press Escape to return to the keyboard option, and examine a single keyboard handler at a time (by selecting a single keyboard handler number from the list). This time you can press a different key (or Shift(s)+key) on each row. You can, of course, experiment as you wish, but here are a few clues to lead you to the most interesting facts. Beginning with the familiar UK keyboard, you might like to try pressing the shifted Fkeys, the shifted cursor keys, Shift-Print, Insert and Copy. Then try the Ctrl key in place of Shift. Now try using Alt as a shift with each key in turn; try Shift with the successful Alt-Key combinations (i.e. pressing three keys together). You should make one small discovery; but more of the Alt key next month.

Try selecting keyboards Greece, Germany, Sweden and Denmark. Except for keyboard Greece, most of the differences lie in the non-alphanumeric keys. Does the Alt key produce the same set of characters on these keyboards? Remember those keys which seemed to have no effect in keyboard Germany ("=") and keyboard Greece ("£","\")? They are in fact an unusual type of shift key. Select the appropriate handler and try pressing one of these shifts followed by E, Y, I, O, U, A, H, V or space. Now press the second key again on its own. I leave you to explore further for yourself...

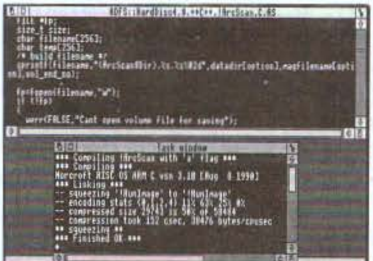
This month's magazine disc contains a copy of the program XploreKeys together with an additional program which displays all the characters obtainable from the various combinations of *Keyboard and *Alphabet.

```
 10 REM >          XploreKeys
 20 REM Program    International Keyboard
 30 REM Version    A 1.0
 40 REM Author     W D Hine
 50 REM RISC User June 1991
 60 REM Program    Subject to copyright
 70 :
 80 DIM name 20
 90 ON ERROR IF ERR<>17 PROCerror:END
100 MODE 11:*FX 4,2
110 REPEAT: PROCheading: PROCkblist
120 INPUT TAB(0,24)"Enter a keyboard n
umber from the list above, or ALL, or Re
turn to quit "kb$
130 IF kb$="" THEN CLS: OSCLI("FX4"):
OSCLI("COUNTRY UK"): END
140 kb% = VAL(kb$): invalid = kb%=FALS
E AND NOT(kb$="ALL" OR kb$="all")
150 IF kb%>0 SYS "OS_ServiceCall",,&43
,2,kb%,name,20 TO ,invalid
160 IF invalid VDU7
170 UNTIL NOT invalid
180 REPEAT: PROCheading
190 IF kb%>0 THEN PROCone(kb%) ELSE PR
OCall
200 PRINTTAB(0,24)"Press space for mor
e chars, Escape to change keyboard(s) ";
210 REPEAT: VDU7: c%=GET: UNTIL c%=32
220 UNTIL FALSE
230 END
240 :
250 DEF PROCheading: CLS: LOCAL col
260 col=33:PRINT"International Module"
270 PRINT TAB(0,2)"Keyboard"TAB(1,3)"h
andler"
280 PRINT TAB(18,2)"ASCII" TAB(19,3)"C
ode"
290 PRINT TAB(52,1)"Alphabet"
300 FOR alph% = 100 TO 126
310 SYS "OS_ServiceCall",,&43,3,alph%,
name,20 TO ,invalid,,,,len
320 IF invalid = 0 THEN
330 name?len = 13: PRINT TAB(col+1,2);
alph% TAB(col,3)$name
340 col += 8
350 ENDIF:IF col>81 THEN ERROR 0,"Two
many alphabets"
360 NEXT: ENDPROC
370 :
380 DEF PROCkblist
390 LOCAL kb%, line%:line% = 4
400 FOR kb% = 1 TO 99
410 SYS "OS_ServiceCall",,&43,2,kb%,na
me,20 TO ,invalid,,,,len
420 IF invalid = 0 THEN
430 name?len = 13
440 PRINT TAB(0,line%);kb% TAB(3,line%
)$name TAB(12,line%)STRING$(68," ");
450 line% += 1: IF line%>23 THEN ERROR
 0,"Too many keyboards"
460 ENDIF
470 NEXT: ENDPROC
480 :
490 DEF PROCall:LOCAL kb%,line%:line%=
4
500 PROCkblist
510 FOR kb% = 1 TO 99
520 SYS "OS_ServiceCall",,&43,2,kb%,na
me,20 TO ,invalid,,,,len
530 IF invalid =0 THEN
```

Continued on page 63

RISC User Disc Contents

Using ANSI C: The Desktop Environment

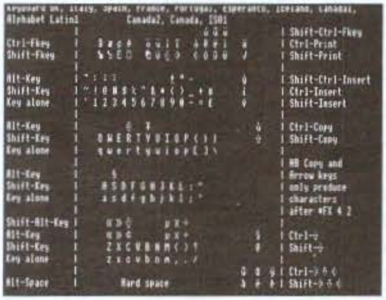


The first part of a new series on creating Desktop applications in C offers four Obey files which allow you to set up your system ready for C coding session within the Desktop environment.

IconBar Shell

A useful application which allows you to build simple multi-tasking programs very easily, by creating a shell which installs an icon on the icon bar and passes information about button clicks and dragged objects to your own routines. The example on the disc programs one of the function keys with the pathname of the object dragged to it, enabling you to insert the pathname into commands or writable icons with ease.

Going International

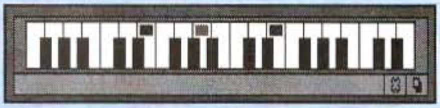


Explore the features of the international keyboard module with the following two programs: *XploreKeys* displays an empty table of keyboard handlers, ASCII codes and alphabets and allows you to chose any one keyboard or all; and *InterNat* displays all the characters obtainable from the various combinations of *Keyboard and *Alphabet.

Fast Wipe Utility

You can wipe a floppy disc efficiently and quickly with this program, which can be run as a utility or can be incorporated into an application to run from the Desktop.

SoundTracker Keyboard



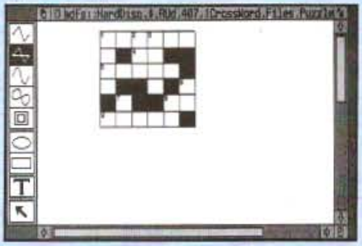
Add colour and animation to the tunes played by the popular PD SoundTracker program. This new Desktop application, written in ARM assembly language for speed, provides a 3 octave musical keyboard, which responds to currently playing SoundTracker tunes. This program is so fast and uses hardly any processor time, that you can run it in the background while working on a document in Ovation, for instance. The SoundTracker program and a tune with which to experiment are also included.

C Notebook

A new library function for obtaining information about named files, i.e. whether a named object is present, whether it is a file or a directory, its filetype and length.

ADDITIONAL PROGRAMS REFERRED TO IN THE MAGAZINE

WP/DTP: Producing a Crossword Puzzle Using Draw

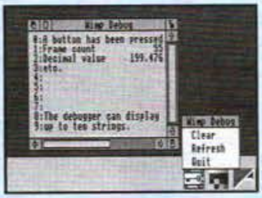


You can design highly impressive crosswords quickly and easily using Draw. The disc contains a simple crossword in the form of a Draw file and a second Draw file which shows the crossword with the solutions entered in the boxes.

June 1991

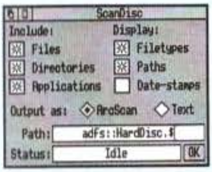
Debugging the Wimp

An enhanced version of the multi-tasking application (Volume 4 Issue 3) which allows you to debug Wimp-based programs while testing and running them. The new version offers an increased work area for the display window, and a reduction in processor time taken by the Debug task.



0:A button has been pressed
1:Frame count 55
2:Decimal value 199.476
3:etc.
4:
5:
6:
7:
8:The debugger can display
9:up to ten strings.

Cataloguing Discs with ArcScan



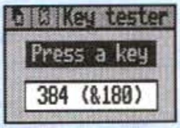
Include: ☒ Files ☒ Directories ☒ Applications
Display: ☒ Filetypes ☒ Paths ☐ Date-stamps
Output as: ● ArcScan ○ Text
Path: adfs::HardDisc.$
Status: Idle

The application ScanDisc enables you to index the contents of all your discs for access by ArcScan III. It scans a disc for its directories, applications and files in order to produce a detailed catalogue including pathnames, datestamps and filetypes, which can than be output as a text file or as an ArcScan file.

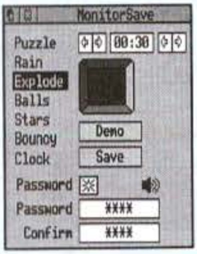
BONUS ITEMS

Wimp Key Value Indicator

Programmers can now check the value of any key on the keyboard (including function keys) with this useful Wimp application.



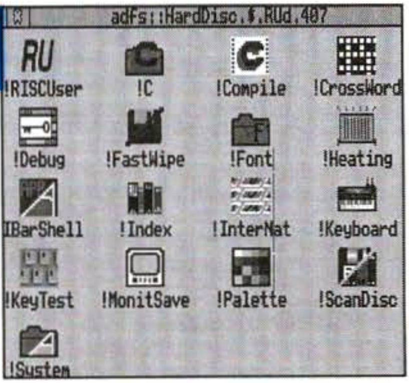
Monitor Saver



Password ☒
Password ****
Confirm ****

A very useful application which will show you a choice of animated displays on the screen to prevent an otherwise fixed image from permanently damaging the screen. Choose your display from any one of: a sliding block puzzle, a floating real-time clock, rain drops, explosions and others.

This month's disc menu



Wessex Font

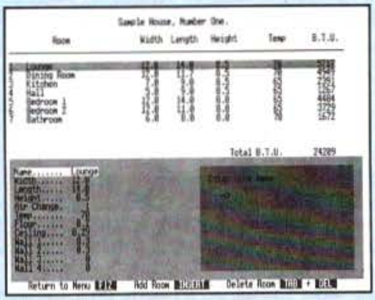
The Quick Brown Fox Jumps Over The Lazy Dog. 0123456789 ABCDEFGHIJKLMNOPQ-RSTUVWXYZ abcdefghijklmnopqrstu-vwxyz !():";.?

A new outline font designed on the basis of a tenth-century English script, which can be used for displays and posters.

16-Colour Grey Scale Palette

A palette offering 16 different grey colours, which you can use for DTP work or creating black and white images on a colour screen.

Central Heating



An MS-DOS version of the Central Heating program published for DIY enthusiasts in Volume 3 Issue 4, which calculates the heating requirements of your home.

ArcScan Data

The ArcScan files for this issue of RISC User and BEEBUG Vol.10 No.1.

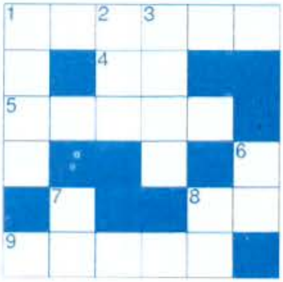
WP/DTP

Producing a Crossword Puzzle Using Draw

In this month's WP/DTP slot Martyn Fox shows how Draw is all you need to produce highly impressive crossword puzzles.

Across

1. Copy for safety
4. Artificial Intelligence
5. On the top bar
8. Communicates with the outside world
9. Type it in



Down

1. 8 bits
2. What's on the disc?
3. 1000 or 1024?
6. Between FOR and NEXT
7. Not off
8. Information Technology

The crossword shown here is not exactly intended to tax the brain, but to illustrate just what can be achieved with no more than Draw and a little thought and planning. The technique makes much use of the grid, and the ability of Draw to lock and unlock it as required. All the features on the puzzle are entered with the grid locked, and at intervals it is unlocked to move items, relative to each other. It is assumed that you have had some experience of using Draw.

Before you start Draw, make sure that the !Fonts application (found on Applications disc 1) has been seen by the filer, as otherwise you will only be able to use the system font in constructing your crosswords.

Once Draw has been started and a window opened, go to the *Grid* menu and select *Show* and *Lock*. The default grid pattern can be used, which is *Inch 1 x 4* (i.e. major intervals of 1", sub-intervals of 1/4"), with a rectangular grid. If you are going to incorporate the crossword into a DTP document, it does not matter much what size you make it, as you will be able to rescale it later.

The first step is to draw the framework. Choose line drawing and draw all the vertical and horizontal lines between the grid dots, using one grid square as one puzzle square. It may be found easiest to draw the outer box first, then fill in the other lines.

The black squares may be filled in individually, or in groups where they make up a rectangle. Choose *Rectangle* drawing, then go to the *Style* menu, and select *Fill Colour* black. The squares, or rectangles, can be turned black simply by clicking Select on two opposite corners. You will not see the rectangle expand as you move the mouse from one corner to the other, because the grid lock is on - the rectangle only appears on the sides of the grid squares, and these already have black lines along them.

There is now a collection of lines and black rectangles on the page, which it will be necessary to treat as a single entity. Go to the *Select* menu, choose *Select All*, then *Group* from the same menu.

At this point, the framework of the puzzle is complete. It is always a good practice to save work of this sort at intervals, and now is a good time. If you decide that you do not want the clue numbers to appear in the solution, you will need to reload the copy that you have now, so save it using a filename that will not be over-written.

From now on, it is useful to have the puzzle enlarged, using the *Zoom* facility. Try a ratio of 3:1.

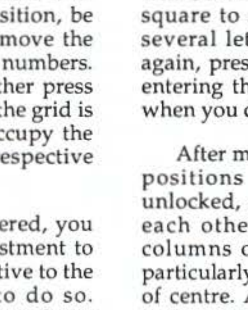
After making certain that you grouped all the lines and black rectangles together, as described above, go to the *Grid* menu and cancel the *Lock* option, then choose *Select* and select the framework by clicking on it. The framework should now be surrounded by a dotted line, and by dragging the mouse, you can move it. Set it slightly up and to the left, so that, when you release the mouse, the framework jumps to its new position, with the grid dots close to the top left-hand corners of the squares. Lock the grid again.

The clue numbers in this puzzle were produced using 8pt Homerton Medium. Choose *Text*, then the font name and size from the *Style* menu, and then click Select close to the grid dot in the square where you want your clue number 1. Provided that the grid is locked, the caret should appear close to the dot. Type '1' and either move the caret or press Return.

If you are not happy with the position of the number in the square, unlock the grid, choose *Select* and move the framework slightly. The number will stay where it is. When you are happy with its position, be sure to lock the grid again, then move the caret and key in all the other clue numbers. After entering the last number, either press Return or move the caret. Because the grid is locked, the numbers should all occupy the same relative positions in their respective squares.

With all the clue numbers entered, you may wish to make a further adjustment to the position of the framework, relative to the numbers, unlocking the grid to do so. Because the numbers have not yet been grouped with the puzzle, it is possible to move any individual number whose position you are not happy about by selecting and dragging it. The puzzle is now complete, and may be saved.

If you do not want your solution to contain the clue numbers, reload the earlier version, which was saved before they were entered. If you are using the complete puzzle, it is necessary to choose *Select*, *Select All* and *Group*, otherwise the relative positions of the framework and numbers will change next time you move things around.



B	A	C	K	U	P
Y	■	A	I	■	■
T	I	T	L	E	■
E	■	■	O	■	T
■	O	■	■	I	O
I	N	P	U	T	■

With the zoom facility still selected at 3:1 and the grid showing but unlocked, move the puzzle slightly so that each grid dot is in the lower half of its square, then lock the grid again. Choose *Text* and, from the *Style* menu, select the point size for the solution letters. The example was produced using 14pt Homerton Medium - you may think that 12pt is large enough.

The procedure for entering the letters is very similar to that for the numbers. Ensure that the grid is locked, then position the caret on the first square, turn Caps Lock on and enter the first letter. It is highly likely that the letter will not fit neatly in the centre of the square, so you will have to unlock the grid, move things around as before until the letter is in the right place, then lock the grid again.

Once you have the first letter correctly positioned, you can enter all the others. It will be necessary to move the caret from square to square, otherwise you will get several letters in the same square. Once again, press Return or move the caret after entering the last letter, or it will disappear when you do your next operation.

After making any final adjustment to the positions of the letters with the grid unlocked, check their positions relative to each other. You may find that vertical columns of letters do not quite line up, particularly the 'I's, which appear to the left of centre. At this stage, you can adjust the position of any individual letter by choosing *Select* and dragging it. It may be easier to judge its position with the grid dots turned off. Be sure to watch its vertical position while moving it horizontally. Indeed, you may find it easiest to perform this operation by holding down Select while the pointer is over the letter, and using the cursor keys to move it one pixel at a time.

And that's all there is to it. Of course, you can embellish the whole thing further by using Draw to include the clues as well (*see illustration*).

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Easiword

An Inexpensive Word Processor

Reviewed by Mark Sealey

INTRODUCTION

Easiword should be just that: an easy-to-use word processor. Yet, if you take into account the extent and quality of the opposition in the field - PenDown, 1st Word Plus, Protext 5, PipeDream, Easy Writer (and not forgetting View etc. under the BBC emulator as well as Wordstar and similar under the PC emulator) - any new software must have certain distinguishing features if it is to make its mark.

Minerva has released what is at heart a spin off from its Desktop Office suite (see review in RISC User Volume 4 Issue 1); this is Easiword, which certainly represents similar value for money. It is aimed chiefly at the education market. This review, though, will concentrate on a wider audience, and consider the product under the twin headings of 'features and facilities' on the one hand and 'ease of use' on the other.

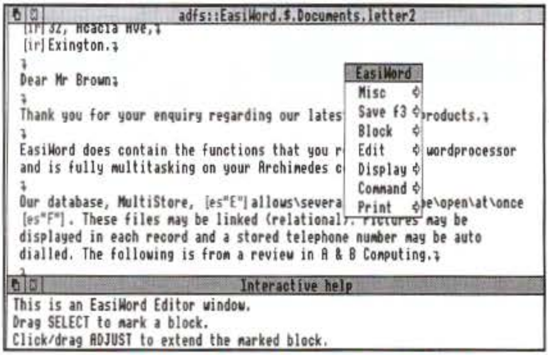
USING EASIWORD

The package comes in a sturdy case, with a crib sheet cum keystrip and a 75 page A5-size manual. The single, unprotected, distribution disc contains four directories at root level: the Easiword application, !System, a cursor location utility (more of this later), and a sample documents directory.

Thankfully, Easiword is fully RISC OS and Desktop compatible; this means that files can be located anywhere you like on disc, and sensible structures for the maintenance of different types of file (letters, letters.family, letters.bank., letters.bank.pleading etc.) can be used.

The Easiword icon, once installed, has the usual Info (details of the version number etc.) and Quit options on pressing Menu. Interestingly, settings made from within Easiword itself can be saved by quitting via this icon and saving the Obeyfile which is offered at this juncture. This is the same useful practice as is employed in Desktop Office.

The application itself is started either by dropping an Easiword file onto it (or by double-clicking to run Easiword and load the file in question) or by clicking on the icon with Select.



```
[ir]32, Acacia Ave,↓
[ir]Exington.↓
↓
Dear Mr Brown↓
↓
Thank you for your enquiry regarding our lates         products.↓
↓
EasiWord does contain the functions that you r         wordprocessor
and is fully multitasking on your Archimedes c
↓
Our database, MultiStore, [es"E"]allows\severa         e\open\at\once
[es"F"]. These files may be linked (relational). Pictures may be
displayed in each record and a stored telephone number may be auto
dialled. The following is from a review in A & B Computing.↓
↓
```

```
This is an EasiWord Editor window.
Drag SELECT to mark a block.
Click/drag ADJUST to extend the marked block.
```

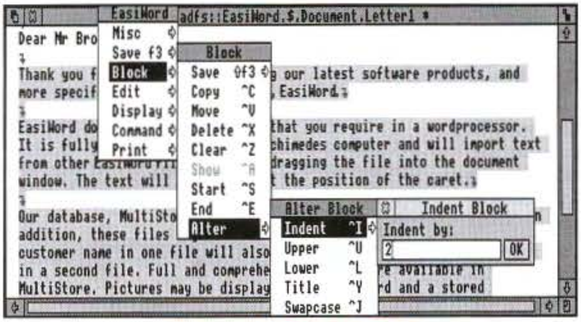
Easiword edit screen showing on-line help

The window that results when Easiword is started is also a standard Desktop one, and looks nearly identical to those of Edit. "Those" because Easiword supports multiple files (to a maximum of six) and text may be transferred between them from one document to another.

Lastly, Minerva has used the official Acorn !Help utility so that anyone unfamiliar with the Wimp environment can have on-line guidance as they work.

STRUCTURE

Within the window two operations are possible: text can obviously be typed, though it is NOT WYSIWYG, employing just word wrap. Alternatively, pressing the mouse MENU button reveals a top level menu with seven options. Some of these have keyboard equivalents. F3, for instance, duplicates Save, which is in fact the second main menu option. The other six are: block operations; find and replace; print; display/layout; embedded commands and miscellaneous, which sets overwrite/insert and reveals details of the current file etc.


Dear Mr Bro
Thank you f g our latest software products, and
more specif , EasiWord.
EasiWord do that you require in a wordprocessor.
It is fully chimedes computer and will import text
from other dragging the file into the document
window. The text will t the position of the caret.
Our database, MultiSto n
addition, these files
customer name in one file will also
in a second file. Full and comprehe re available in
MultiStore. Pictures may be displa rd and a stored

Performing a block operation

The deepest nesting of any menus is to four levels, the maximum number of items on one menu nine - apart from the embedded command lists. These are important considerations when you think of the target users. The structure itself is sound and very well thought out.

There is a useful and clear menu map as well, at the back of the manual. Standard techniques are used throughout - familiar dialogue boxes and ways of selecting 'paper' and 'ink' - indeed it really would be possible to do everything except enter text without touching the keyboard!

Almost the first thing you notice is that each carriage return is shown on screen by an unobtrusive green arrow. This is certainly quite useful - especially to children and anyone trying to help them with their work! Text entry, editing, deletion and so on are all handled in utterly predictable ways. Sensible combinations of Shift and Ctrl move quite naturally about the document.

The actual dimensions of page and text (X and Y stretch), line spacing and margins can all be easily set from the same submenu. Text can thus be made to appear larger than usual: a boon for the partially sighted or some young children.

On the other hand, the preview option is a little crude, perhaps: your text is displayed in black and white on a fresh screen as if it were the tail end of a non-window Desktop operation complete with the instruction to "press Space or click mouse to continue".

Printing can only be achieved via a RISC OS printer driver. Minerva claim that this is because Easiword is "like many other applications written to run on RISC OS". However, this does result in slower printing than would be the case if direct character mode printing could be used.

BLOCKS

The mouse is used to mark the start and end of blocks and the selection is shown in a 'classy' grey. Once selected, though, the length of the block can be shrunk or swollen by dragging with Adjust. There is an 'undelete' function and a particularly rich *Alter* submenu where the case of text can be swapped, set to all upper, all lower, be set title style (first letter of every word capitalised) and the indents of each line in the block changed. The block operation as a whole is flexible yet uncluttered and probably does as much as you will ever want.

EMBEDDED COMMANDS

The feature that will do most, perhaps, to sell Easiword is its ability to alter text format by placing *embedded* commands inside the text. Users of the Wordwise family on the 8-bit BBC micros will be familiar with this: if a line is to be centred, for instance, you press F1, type the letters 'CE', which appear in green (at least in edit mode), then F2. You then continue entering text, normally, in white. What happens when previewing, though, is that the whole line is pushed to the centre. This is just how Easiword works - even down to the green colour.

There are some 50 embedded commands. These are grouped into four clusters: those concerned with controlling the operation of the application - for example by defining the pound sign, suppressing messages and inserting page number etc. Those to set tabs, page length, footers and headers etc. Then there are embedded commands to adjust the overall format (justification, indents and so on) and lastly ones which place the date/time or system variables just where you want them in your text.

All these work well, are all accessible from the 'Command' menu and provide what is really a novel way of achieving effects for the Archimedes, though one which is not unique.

THE EDIT SUBMENU

This has two branches: that affecting find and replace searches - all with the usual parameters that can force either upper or lower case to be matched and ones to restrict the area in the text which is to be searched. Then there is a 'Go-to' submenu: this is most useful in the ways in which it allows movement through the document. For instance, you can zoom straight to the start or end of a block, a specified paragraph or the next occurrence of a particular character.

Similarly, pressing F6 moves the caret to the place in the document where the last edit took place: if you had scrolled past the point at which you were working maybe to check the exact way that you had written something...'pm', 'p.m.' or 'afternoon' etc, then you can resume exactly where you left off.

FLASHER

In a similar vein, the separate utility *Flasher* can be installed on the icon bar of the Desktop and will cause the mouse pointer to jump smoothly to wherever the caret is hidden when this same icon is clicked on. The caret in fact might be in a document not currently at the front of the window stack, for example. Flasher can be used with all legally written applications and could turn out to be a useful if minor gift from the publishers.

DOCUMENTATION AND CONCLUSIONS

Despite containing at least one reference to 'DTOWord', the manual is well laid out, reasonably indexed, and has a lengthy tutorial as well as a useful reference section. Minerva offers its usual 60 days free software support for Easiword on registering.

At the top end of the market there is considerable convergence between word processors and DTP. However, if this trend continues, it is likely to leave a place at the other extreme where simple reliable text editing is all that is required - in an environment where text is treated just as any other data, and dropped in and out of applications on the Desktop. Easiword falls squarely into this category.

In fact it is almost easier to define the slot in the market which Easiword can expect to occupy by listing the features it does NOT have: no indexing, footnoting or spellchecker, no multiple columns or easy addition of graphics, no macro facility. The list could go on.

What *is* here works very well indeed. Easiword is very easy to use, probably the easiest product of its kind on the market. This has to be its principal feature.

And at the price, one can scarcely grumble at the lack of features. So, it comes down in this case more than in most to your having a clear idea of what your requirements are.

If you need a full feature word processor, forget Easiword. If, on the other hand, you are after a simple yet powerful text editor which can multi-task and swap data with other legally written software, then Easiword could well be for you, particularly if you hanker after the world of Acorn 8-bit software but with all the conveniences of the Archimedes.

Product	*Easiword*
Supplier	*Minerva* *Minerva House,* *Baring Crescent,* *Exeter EX1 1TL.* *Tel. (0392) 426160*
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Icon Bar Shell

This application from Ben Avison provides the building blocks for you to create simple multi-tasking programs without extensive knowledge of the Wimp.

If you have ever wished you could write multi-tasking programs, but not found the time to learn the complexities of Wimp programming, then for applications which do not require Desktop windows to be opened, the Icon Bar Shell presented here could be the answer. As its name implies, it acts as a task "shell", setting up the icon on the icon bar and interacting with the Wimp. Your sub-program resides in a procedure at the end of the shell, and is passed information in certain variables which enable it to decide what operations to perform. The sub-program will be run whenever you click Select on the icon bar icon, or if an object is dragged to it from a Filer window. In the latter case, the sub-program will also be informed whether a directory, application or file (complete with filetype) has been dragged.

Although you cannot use this shell for opening multi-tasking Desktop windows, you can nevertheless display information on the screen if required. Any output to screen, for example from a PRINT statement or a command such as *Cat which displays information, will open a command window in the centre of the screen.

USING THE PROGRAM

First, it is necessary to create an application directory. This may be done using the "New directory" option from the Filer window menu, but note that for it to be recognised as an application directory, the name must start with an exclamation mark, for example *!IBarShell*.

Next, you need to create an Obey file called !Run and place it inside the application directory. You can create this with Edit by using the *New Obey file* option from the *Create* sub-menu. The file should read:

```
| !Run file
WimpSlot -min 8k -max 8k
Run <Obey$Dir>.!RunImage
```

The application directory also needs to contain a sprite file (generated by Paint) containing one sprite, normally in mode 12, size 34x17, with the same name as the application directory - in this case *!ibarshell*. This sprite will appear in the directory viewer if you have large icons selected, and can also be the sprite displayed on the icon bar, as is the case here. Optionally, another sprite can be created which will be used when small icons or full info are selected in the directory viewer. This should be 18x9 pixels, with its name prefaced by "sm", e.g. *sm!ibarshell*. If you wish to use a different icon on the icon bar, then this, too, should be included in this file. Note that icon bar icons should be 34x17 pixels for a mode 12 sprite.

Finally, Listing 1 should be typed in from Basic, or from the Basic Editor, and saved in the application directory as !RunImage. It is a good idea to save the unaltered program before customising it in order to check that you have typed it in correctly, and so that the shell can be used later for other applications.

CUSTOMISING THE PROGRAM

There are a few parts of the program which you will need to change in order to use it for your own task. Line 80 contains the name of the task as passed to the Wimp for use in the menu, the command window title and the Task display. Line 150 contains the name of the application directory if you are using the same sprite for the large directory viewer icon and the icon bar icon, or the name of the special sprite in !Sprites otherwise. Line 190 determines whether your icon appears on the left- or right-hand side of the icon bar (-2 or -1 respectively).

Last, but certainly not least, you must complete the definition of PROCuser_routine at lines 930 onwards. The parameters passed to the procedure are *click%*, *dir%*, *appl%*, *filetype%* and *pathname$*. *click%*, *dir%* and *appl%* will return TRUE (i.e. the value -1) if the application's attention is required due to a click on the icon, a drag of a directory on to the icon, or a drag of an application directory on to the icon, respectively; otherwise they are FALSE (i.e. a value of 0). *filetype%* will return the filetype of the file dragged to the icon, if a file was dragged (ie. a number between 0 and &FFF, or -1 if load and execution addresses are given instead of a filetype). Finally, *pathname$* is a string giving the full pathname of the dragged object.

Your routine does not have to respond to all the possibilities if they are not needed, so for example, a program to set the CSD need only act upon drags from an application or directory. You can, of course, append existing programs in their entirety to IBarShell, starting them from within PROCuser_routine, but note that if the program is very large, you may need to increase the WimpSlot allocation in the !Run file in order to give your program more workspace.

Command line statements may be included by the use of the Basic keyword OSCLI; star commands cannot include a Basic variable, but OSCLI can. For more information, see the BBC Basic Guide.

There are many useful utilities which you could build using IBarShell as a starting point. Three very simple examples, each of which requires only one line of code, are shown below. The first of these sets the CSD, the second opens a window onto the printer stream, and the third *TYPEs a file of filetype FFF, FFE or FEB.

```
930 IF dir% OR appl% THEN OSCLI"Dir "+
pathname$
```

```
930 IF click% THEN *Filer_OpenDir Pri
nter:
```

```
930 IF filetype%=&FFF OR filetype%=&FFE
OR filetype%=&FEB THEN OSCLI"Type "+path
name$
```

The example supplied on this month's magazine disc programs a function key with the pathname of any object dragged to the icon. This is very useful if you want to insert the pathname into a command or writeable icon.

```
   10 REM            >!RunImage
   20 REM Program    IBarShell
   30 REM Version    1.2
   40 REM Author     Ben Avison
   50 REM RISC User June 1991
   60 REM Program    subject to copyright
   70 :
   80 Application$="IBarShell"
   90 REM This is the name displayed
  100 REM on the menu
  110 REM and in the Task Window
  120 REM It should be 12 characters
  130 REM or less
  140 :
  150 Spritename$="!ibarshell"
  160 REM This is the name of the sprite
  170 REM to use (from !Sprites)
  180 :
  190 windowhandle%=-1
  200 REM This should be -1 for the
  210 REM right side of the icon bar
  220 REM or -2 for the left
  230 :
  240 DIM block% &100,menu% 51
  250 exit%=FALSE
  260 PROCinitialise
  270 ON ERROR PROCerror
  280 REPEAT
  290 PROCpoll
  300 UNTIL exit%=TRUE
  310 SYS"Wimp_CloseDown"
  320 END
  330 :
  340 DEF PROCinitialise
  350 SYS"Wimp_Initialise",200,&4b534154
,Application$
  360 block%!0=windowhandle%
  370 block%!4=0:block%!8=0
  380 block%!12=68:block%!16=68
  390 block%!20=&301A
  400 $(block%+24)=Spritename$+CHR$0
  410 SYS"Wimp_CreateIcon",,block% TO iconhandle%
  420 $menu%=Application$
  430 menu%?12=7:menu%?13=2
  440 menu%?14=7:menu%?15=0
  450 IF LEN(Application$)>4 THEN menuchars%=LEN(Application$) ELSE menuchars%=4
  460 menu%!16=12+16*menuchars%
  470 menu%!20=44:menu%!24=0
  480 menu%!28=128:menu%!32=-1
  490 menu%!36=&7009031
  500 $(menu%+40)="Quit"+CHR$0
  510 ENDPROC
  520 :
  530 DEF FNerror
  540 !block%=ERR
  550 $(block%+4)=REPORT$+" (Error code "+STR$(ERL)+")"+CHR$0
  560 SYS"Wimp_ReportError",block%,3,Application$ TO ,answer%
  570 IF answer%=2 THEN END
  580 ENDPROC
  590 :
  600 DEF PROCpoll
  610 SYS"Wimp_Poll",&1831,block% TO reason%
  620 CASE reason% OF
  630 WHEN 6:PROCmouseclick
  640 WHEN 9:exit%=TRUE
  650 WHEN 17,18:PROCmessage
  660 ENDCASE
  670 ENDPROC
  680 :
  690 DEF PROCmouseclick
  700 CASE block%!8 OF
  710 WHEN 2:SYS"Wimp_CreateMenu",,menu%,block%!0-68,140
  720 WHEN 4:PROCaction(TRUE,FALSE,FALSE,0,"")
  730 ENDCASE
  740 ENDPROC
  750 :
  760 DEF PROCmessage
  770 CASE block%!16 OF
  780 WHEN 0:exit%=TRUE
  790 WHEN 3
  800 pathname$="":counter=block%+44
  810 WHILE ?counter
  820 pathname$+=CHR$?counter
  830 counter+=1:ENDWHILE
  840 type%=block%!40
  850 PROCaction(FALSE,type%=&1000,type%=&2000,type%,pathname$)
  860 ENDCASE
  870 ENDPROC
  880 :
  890 DEF PROCaction(click%,dir%,appl%,filetype%,pathname$)
  900 SYS "Wimp_CommandWindow",menu%
  910 :
  920 REM Place your own routine here, for example:
  930 IF click% THEN PRINT "Icon clicked" ELSE PRINT pathname$;" dragged to icon"
  940 :
  950 SYS "Wimp_CommandWindow",0
  960 ENDPROC
```

· POINTS ARISING · POINTS ARISING · POINTS ARISING ·

DESKTOP KEYBOARD
(Volume 4 Issue 6)

Unfortunately an incorrect version of the program crept into the magazine listing. Line 310 should be replaced by the following lines:

```
  310 WHEN handle%:IF bk%!8 AND 5 THEN
  311 ic%=bk%!16:CASE TRUE OF
  312 WHEN ic%>-1 AND ic%<12
  313 SYS "Wimp_ProcessKey",key%(ic%)
  314 ENDCASE
  315 ENDIF
```

If these modifications are not made, you will get an error if you click on the background of the KeyPress window. The version on the magazine disc was correct, however.

OAK SOLUTIONS SCSI DRIVE
(Review of ideA drives, Volume 4 Issue 6)

The price quoted for the Oak Solutions 20MByte SCSI drive in this review was incorrect. The current price, including SCSI interface is £299 ex. VAT for an internally fitted drive. An external SCSI drive with interface is £349 ex. VAT.

42M Removable Drives – £499 + VAT

If you are looking for a hard drive for your Archimedes or A3000, why not consider using a MicroNet MR45 removable hard drive ?…

- **Fast** – The average access time is 20 milliseconds, so these are FAST devices. When used with an Oak SCSI card, the file transfer rate is the same as a standard 45M hard drive.
- **Reliable** – The technology of these drives has been proven by use in huge quantities on the Apple Macintosh computers.
- **Robust** – The discs, when not in the drive, are extremely robust. We (deliberately!) threw one half-way across the office, it dropped on the floor and rolled over a couple of times. We then verified it and found that it did not have a single error on it!
- **Flexible** – The medium is removable, so you can use different discs for different uses, each with its own boot file – one for DTP, one for games etc.
- **Physically secure** – The medium is removable, so you can take out the disc and lock it up in a safe place.
- **Secure data** – The discs can be write protected, like floppy discs, to protect the data.
- **Cheap** – The price of the drive, including a single 42M disc, is just £499. (£590 inc VAT & carriage) Extra 42M discs are £75 each inc VAT. (SCSI podules are available from £170.)

Public Domain Software

Norwich Computer Services has a range of over 40 discs of Archimedes public domain software from various sources. Many of the discs contain several quite substantial applications for as little as £3.50 per disc. Some of the more popular applications are…

- **!PCDir** – A desktop utility that allows the transfer of files between MS-DOS discs and Archimedes discs. (One of many programs on Careware Nº7 – £7. The aim of Careware discs is to raise money for charity. For each disc, £6 is sent direct to charity.)
- **!Translator** – This application allows you to translate between various image file formats – sprite, GIF, TIFF. (Shareware Nº21, £3.50, which also has other graphics applications.)
- **!Draw+** is an updated version of !Draw with many extra features including keyboard short-cuts. (Shareware Nº 34, £3.50, which also has !Draw lineart and other DTP utilities.)
- **Keystrip printer** – Creates !Draw keystrip from an !Edit file of the text. (Shareware Nº32, £3.50 – also has a lot of other DTP stuff on it.)
- **YAIG** – Yet Another Invaders Game – excellent implementation. (Shareware Nº16, £3.50)
- **DOS filing system and DFS reader/writer** – These are available on Shareware Nº31, £3.50, which also has a 'C' editor and various other utilities.

Ring, write or fax us if you want a full list of our PD software.

Norwich Computer Services

96a Vauxhall Street, Norwich NR2 2SD. (0603–766592 / Fax 764011)

Using the PEP SpeechSystem

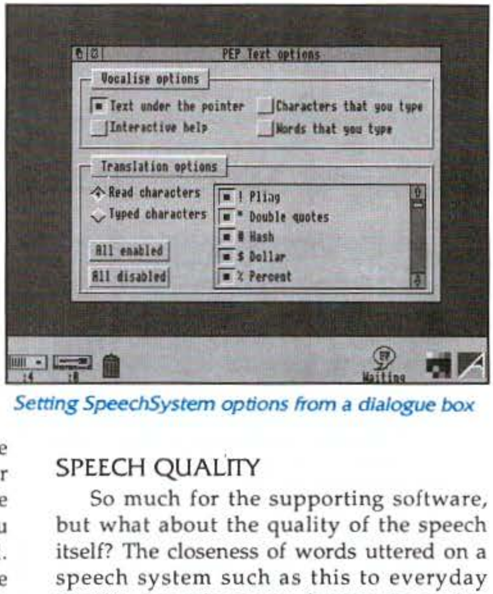
by Lee Calcraft

PEP Associates' SpeechSystem is the second software-based speech system to be released for the Archimedes range of computers. Like Atomwide's DT-Talk (reviewed in RISC User Volume 4 Issue 3) it is allophone-based, and permits English words to be vocalised using a simple star command, or by scanning a text file.

Although SpeechSystem is very similar in price to DT-Talk, it offers a much more comprehensive set of features, and its clearly written and thorough manual is consequently much larger than Atomwide's. Like DT-Talk, SpeechSystem allows you to drag a text file to its icon on the icon bar, and this will be spoken from start to finish. But SpeechSystem displays the text in a scrollable window which has buttons allowing control over the process. You can for example control which sections of a file will be vocalised, or repeat a particular line that you did not hear.

An Options entry in SpeechSystem's icon bar menu reveals a wealth of useful features. For example, you can choose to have vocalised all words which you type anywhere on the Desktop. So for example with this option set, you can get into Edit or Ovation, and words typed will be automatically spoken back. Alternatively you can have echoed back all letters typed. Another option causes words under the pointer anywhere on the Desktop to be echoed (providing that the text is in the system font), while a fourth will vocalise output from Acorn's interactive help system. All of the above features might well be of use to partially sighted users, and with some assistance the speak-as-you-type options could conceivably be of use to the blind.

The Options dialogue box which controls these features also allows you to individually determine how a large number of symbols and keys will be echoed. For example you can specify that a full stop will be spoken (as "Full stop") when encountered in a text file, or how a particular control key will be vocalised. Unfortunately, in the current version of SpeechSystem, these choices are not saved, but you can edit the text file which controls them if you wish to implement a permanent deviation from the supplied defaults.


PEP Text options

Vocalise options

☑ Text under the pointer
☐ Characters that you type
☐ Interactive help
☐ Words that you type

Translation options

● Read characters
○ Typed characters

☑ ! Pling
☑ " Double quotes
☑ # Hash
☑ $ Dollar
☑ % Percent

Setting SpeechSystem options from a dialogue box

SPEECH QUALITY

So much for the supporting software, but what about the quality of the speech itself? The closeness of words uttered on a speech system such as this to everyday English depends on two factors: the quality of generation of individual phonemes, and the ability of the software to convert sequences of letters constituting English words into an appropriate sequence of component phonemes.

The conversion algorithms in SpeechSystem appear to be as good as, if not better than, those in DT-Talk. Moreover, SpeechSystem contains an exception dictionary facility. This allows you to build up a dictionary of words which you require to be pronounced in a special way. So for example, if SpeechSystem pronounces your surname incorrectly, you can enter this in the *New entries* dialogue box, and you will be shown the phonetic translation currently used, and you may edit this to substitute any sequence of phonemes that you require. The process is fully interactive, and you can hear the results of your labours at any point, or listen to the sounds of any selected phoneme.

In the final analysis the use of speaking software such as SpeechSystem depends heavily on its ability to faithfully render the individual phonemes of the appropriate English dialect. Here it must be said that SpeechSystem performs far from perfectly. While lacking the robotic "twang" of DT-Talk, the voice has a strangled quality to it. The man (it is clearly a man's voice) has something badly wrong with his larynx - laryngitis perhaps? Moreover the phonemes which make up some words seem to be spoken much too quickly.

I find DT-Talk's leisurely speech much more agreeable to listen to - even if I cannot always understand what it is saying. But the considerable number of extra features, and the fact that it is slightly easier to understand than its rival could well make SpeechSystem the better buy - particularly where a high degree of achieved comprehension is important.

Product:	*The SpeechSystem*
Supplier:	*PEP Associates* *55 St Pauls Drive,* *Chatteris,* *Cambridgeshire PE16 6DG.* *Tel. (03543) 4170*
Price:	*£25.00 all inclusive.*

A SpeechSystem demo disc is also available for £5.00.

RU

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A3000/Arc Special Edition
Version 2 : £28.95

- RiscOS Multi-Tasking Application
- 28 Automatic Standing Orders/Any Period
- 48 Income/Payment Headings with budget columns
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- 20 Quick Entry Pre-sets
- 3000 Entries per File
- 50 Character Description Space
- Full Scrolling Entries for easy input/edit/search
- Reports to Screen/Printer/File
- Calculator/Note Pad/Autosave & Much More

"Personal Accounts is very powerful, good value for money, easy to use and comes highly recommended"
Review of Version 1, Archive, November 1990

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Into the Arc
Using Draw for Text

By Mike Williams

This month's article in the series *Into the Arc* returns to the Draw application. This is a powerful application supplied with the Archimedes, but some users find the description in the User Guide insufficient for them to master all the skills needed to make the most of Draw. Here we will take a look at the creation of *text objects*. This is the way in which Draw allows you to create and manipulate text. It should not be confused with the use of *text areas*, the method by which Draw allows text to be imported and manipulated in DTP fashion (see *Into The Arc*, RISC User Volume 3 Issue 3).

Draw can also make use of any fonts which you may have, as well as the system font. This greatly enhances the appearance of any text, but remember that any such outline fonts must be installed first (by double-clicking on your Fonts application) before installing Draw. You should also note that it will always be necessary to re-install the same fonts, if the resulting Draw file containing text is to be redisplayed at a later date, or !Fonts must at least have been 'seen'. Unless this is done, Draw will use the system font, and the result will usually be disastrous, at least as far as appearance goes.

To investigate the use of text, it is best to experiment as we go, so I will assume that any fonts you wish to use have been loaded, and that Draw is installed on the icon bar. Click with Select over Draw's icon bar icon to open the Draw window, with the Draw tools down the left-hand side.

To enter text you must first select the Text tool (the large letter 'T'). Then move the mouse pointer where you want the text to appear, and press Select again to position the caret at the same location. Any text now entered will commence from the caret position. The Delete key will operate as expected, but the cursor keys have no effect. The only way to modify a text entry is to delete back to the relevant character position and then re-enter.

Pressing Return at any time fixes the current line of type as a *text object*. Note that a text object can only occupy one line - if text is to flow over several lines, you must determine where the end of line breaks are to occur, and create each line as a separate text object (at this stage).

Let us try a simple example. Move to any suitable point in the Draw window and press Select. Now enter the following lines of text, pressing Return at the end of each line:

```
RISC User
for
the
Archimedes
```

You will notice that on pressing Return the caret moves to the start of the next line, and that all lines of text are aligned with the originally selected caret position (see figure 1).

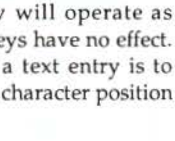
RISC User
for
the
Archimedes

Figure 1

Each line constitutes a text object. To see the consequence of this, select the bottom 'Arrow' tool, and then click with Select over the first line of text "RISC User". A standard outline Draw box will appear around the text, with two *ears* at top right, and bottom right. The text object can be moved within the Draw window by pressing Select over the text object and dragging the object to its new position. Just try moving this object around the screen.

The top right-hand ear is used to rotate the box, but text cannot in fact be rotated, so the function of this ear is redundant as far as text is concerned. The bottom right-hand ear can be used to resize the box, and the text contained within it will be rescaled as well. As a simple exercise try making "RISC User" quite large, "Archimedes" an intermediate size, and dragging the objects around to arrange them as shown in figure 2.

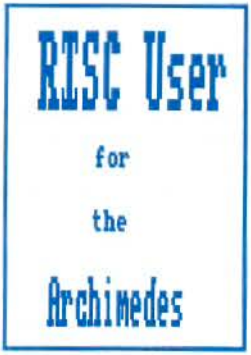
RISC User
for
the
Archimedes

Figure 2

If having selected one text object, you use the Adjust button (instead of Select) to select further text objects, then all the selected text can be moved within the Draw window as a single object. You can also make this semi-permanent by clicking with the Menu button over the Draw window, following the menu option *Select* and then clicking on *Group*. The objects once grouped can be *ungrouped* by using this option from the Select menu. In fact, of course, these are the standard techniques which are used within Draw to manipulate any selected object or group of objects.

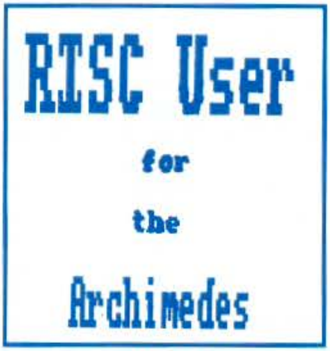
RISC User
for
the
Archimedes

Figure 3

Some of the Draw menu options are very applicable to text objects. Select all of the text, and use the Select menu to group the text as a single object (all the text will be enclosed in a single outline box). This can be used to move the text around as a whole, preserving the relative positions of each line. Furthermore, if you resize the box, the text will also be rescaled, but preserving the relative proportions of size previously established as separate text objects (see figure 3).

Using the Menu button, invoke Draw's main menu and follow the *Justify* option. You have a choice of *Left*, *Centre* or *Right*, so choose Centre for now to centre the text objects within the bounding box. There are three other options, which position the bounded objects at the top, in the middle, or at the bottom vertically. These do not have much value for text, but it is still worthwhile to experiment just to see what effects can be achieved (it's maybe worth saving your Draw file first so that you can return to an 'uncorrupted' display later).

All the other options in the Select menu can also be applied to text objects. *Rotate* is quite interesting as text cannot be rotated as such - it is always horizontal - but if you apply a rotation, say 30, the text will assume a skewed appearance (see figure 4). Text objects can also be scaled vertically and horizontally to achieve further effects, similar to those achieved by dragging the bottom right-hand ear of the bounding box.

USING FONTS

Let's assume that we have skewed our text as described above (figure 4). Now go back to the main Draw menu and use the Select menu to *Ungroup* the set of text objects. Next, click anywhere within the Draw window to deselect all the objects, and then click over "RISC User" to select this text object alone (all this assumes that the Select tool has been selected all this time).

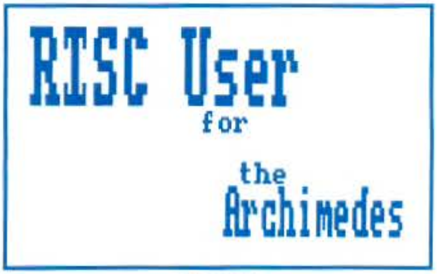
RISC User
for
the
Archimedes

Figure 4

Back to the main menu now, but this time select the *Style* option. You will see five selectable options at the bottom of this menu. Follow the *Font name* option and a list of selectable fonts will appear. Unlike some DTP packages, bold, medium, light and other attributes appear as separate fonts. Your choice will depend on the fonts available to you, but I selected Paladin bold italic (for the "RISC User"). For the two words "for" and "the" I selected SwissB bold, and for the "Archimedes" Paladin bold (but not italic).

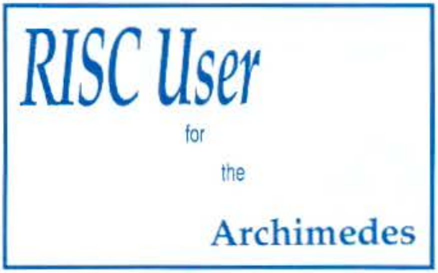

Figure 5

My next step was to use the *Font size* option, applying this first to "RISC User" at 32pt and then to "Archimedes" at 20pt. Remember that 1pt (one point) is equal to 1/72nd of an inch. Typical text sizes range from 10pt to 14pt; sizes larger than this are usually reserved for headings and titles. I did not quite like the look of the "RISC User" at this stage so I selected this text object and dragged and resized it to achieve finally the effect shown in figure 5.

The style menu also contains a number of other options which are relevant to text objects. *Font height*, also given in points, can be used to set the height of text separately to its horizontal scaling. By default, height will be set the same as the font size. Text can also be coloured using the *Text colour* option in the Style menu (I put "RISC User" into red). Don't be misled, though, into assuming that the *Background* option in the same menu will set a background text colour. It is used with anti-aliased text. By setting this colour to be the same as that of the real background, the anti-aliasing will be effectively removed.

To experiment with this option further, select the rectangle drawing tool and create a rectangular frame around the text. Now choose the Select tool, select this rectangle and from the main Draw menu select the Style option, and then *Fill colour*. Choose a colour to fill the rectangle - I chose the lightest shade of grey - and click on OK. The rectangle will be filled, and all your text will disappear as it now lies behind the filled rectangle. Go back to the main menu, and then from the Select menu choose *Back*. This has the effect of sending the filled rectangle to the back of the text (see figure 6).

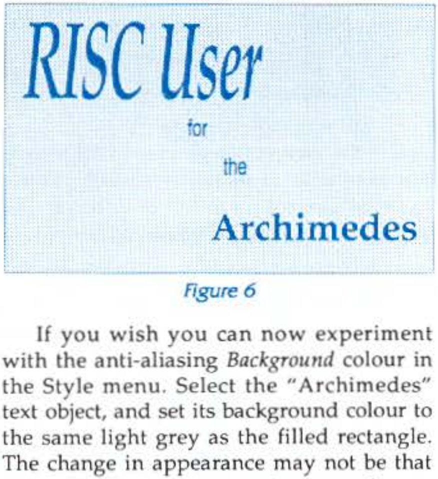

Figure 6

If you wish you can now experiment with the anti-aliasing *Background* colour in the Style menu. Select the "Archimedes" text object, and set its background colour to the same light grey as the filled rectangle. The change in appearance may not be that obvious - you can emphasize what is happening by choosing a more unsuitable colour such as blue.

Well there you have it. The end result of our experimenting is a very acceptable text display which could hardly be bettered by any DTP package around. Given a few outline fonts, the facility of Draw to handle quite sophisticated text displays coupled with its powerful drawing capabilities makes it one of the more remarkable pieces of software for the Archimedes. And it's there for every user to use.

The Sampler and MIDI Card

£69 exc VAT - Econet Version

The sampler and MIDI card opens up the exciting world of sound manipulation and control at a price that allows everyone to join in.

The card fits neatly in the Econet socket inside your machine thus leaving your podule slots free for other upgrades. It has no unsightly cables protruding from the machine - all leads connect via an adapter directly to the standard Econet socket.

Even though the cost may be low, specification and quality haven't been skimped on. The board is an 8-bit sampler with variable sample rate capable of sampling at up to 250 Khz with input via a 3.5mm jack allowing connection to Hi-Fi's, CD players, Walkmans etc. The software supplied supports a range of features including over-sampling, sample rate conversion, and software filtering. Waveform editing is possible with facilities to view the waveform (including real-time analysis), fade in/fade out, and cut and paste features. The samples produced are perfect for use in other packages such as Tracker and Armadeus.

The MIDI side provides 16-channel MIDI IN and MIDI OUT and the supplied software emulates the latest version of Acorn's MIDI software. This allows it to work with programs that can run using Acorn's podule and their software.

Tracker

£49.95 inc VAT

Tracker is the perfect complement to the Sampler and MIDI card. It is a full 8 channel sequencing package that creates stand-alone music modules which will play on the Archimedes without any need for extra hardware. Using the supplied samples (over 150 of them!) or your own, you can create complex pieces of music with Trackers many advanced features including:

• Pitch bend (portamento) • Arpeggio • Stereo Panning • Volume Slide • Track Swapping and Mixing •
• Note entry either via the Archimedes or MIDI keyboard •

A number of complete songs are supplied together with a comprehensive manual explaining all the facilities in detail. Extra music disks (Numbers 2-10) are available at £4 each.

SPECIAL OFFER: SAMPLER/MIDI CARD + TRACKER FOR ONLY

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• Plugs into the parallel printer port • No special support necessary • Control modules supplied for most games •
• Comes complete with software to mimic key presses • Programming language supplied for complex modules •

"The programming language and the compiler enables the joystick....to be used to control virtually any piece of software. Since the RTFM interface does not do this, **The Serial Port's effort is the best buy of the two**."

Acorn User February 1991

The Serial Port, Burcott Manor, Wells, Somerset BA5 1NH
Tel: 0243 531194 Fax: 0243 531196

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We produce a range of hard drive upgrade options for the Archimedes range of computers. The controller card can be based either on the **SCSI** or **IDE** interface standards and drives come in many capacities for internal (300/400 series) or external connection. The hard drives used are high quality **Seagate** devices which are all fully guaranteed for one year.

SCSI is becoming the Archimedes 'standard' choice due to the range and number of devices you can connect to the interface - such as tape streamers, scanners, printers, CD-ROM drives etc as well as hard drives. Our SCSI package uses our **fast 8-bit interface podule** - also available as an **internal A3000 card** at no extra cost - and Acorn SCSI compatible software.

IDE is now the fastest selling drive standard in the world. It has two main advantages in that it is fast and is excellent value. We produce a **full 16-bit IDE interface** podule complete with all necessary software that allows it to be used in exactly the same way as all other filing systems such as SCSI, ADFS, RAMFS etc. For the A3000 we supply an external boxed version including the podule which has the advantage of leaving your internal slot free for other upgrades.

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SCSI	**45Mb 28ms Internal**	**£299**	**80Mb 24ms Internal**	**£399**
	External	**£369**	**External**	**£469**
IDE	**40Mb 28ms Internal**	**£269**	**89Mb 19ms Internal**	**£379**
	External	**£349**	**External**	**£449**

The Graphics Enhancer

£179 - including installation

The Graphics Enhancer adds a new dimension to the graphics capabilities of the Archimedes. Now you can use any 256 colours from a full 24-bit colour palette (16.7 million colours) in the desktop at resolutions up to 768 x 288 on a standard monitor and 832 x 328 on a multi-sync, as well as other modes such as 512 x 512 and 640 x 480 thus allowing, for instance, a true 256 grey scale to be obtained. Outside the desktop modes are available using up to 65536 colours. Multiple VIDC clock rates are software selectable and the interface can be controlled by a range of SWI calls and * commands.

For a full specification sheet please contact us.

"Frankly, I think the addition of such a board should be a very high priority. An upgrade equal to adding an ARM 3 board, and cheaper...The Serial Port promises us that the board will be something very special and I am inclined to agree. I think that the Graphics Enhancer will appeal to a massive Archimedes market." **Computer Shopper April 1991**

Don't forget our other hardware and software products including
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Tel: 0243 531194 Fax: 0243 531196

All prices above exclude VAT. SCSI and IDE systems can be installed by us for an extra £25 - otherwise delivery is £10.

The 80 Column

In this month's column Alan Wrigley looks at fancy text, printer output from programs, and curing a minor problem with the HP DeskJet.

FANCY TEXT

As described in the review of the new Acorn printer drivers (Volume 4 Issue 3), it is now possible to incorporate control codes into text files to make use of various printer facilities - the so-called "fancy text" option. To help you use these facilities in your own programs, or in text files which you wish to print in "fancy" style, here are the code sequences for some of the more common printer functions:

`<27><192>`	Start literal Escape sequence
`<27><%10fedcba>`	'a' turns bold on/off
	'b' turns light on/off
	'c' turns italic on/off
	'd' turns underline on/off
	'e' turns superscript on/off
	'f' turns subscript on/off

If the bit is 1, that function is turned on, and if 0 it is turned off. Thus to turn on bold and underline at the same time you would send 27 followed by 137 (i.e. 10001001 in binary), while to turn everything off you would send 27 and 128. Note that the printer driver's !Help file is misleading, and implies that the functions are toggled if the bit is set to 1. This is not the case.

A "literal Escape sequence" is a sequence of characters sent directly to a printer - so, for example, if you wish to make use of a printer function not directly supported by the printer driver, such as enlarged text, you could send the actual sequence recognised by your printer. The sequence must end with <27><0>. We will cover this, and other control codes recognised, more fully in a forthcoming article on the text facilities offered by the new drivers. In the meantime, the sequence of bytes to set enlarged on an Epson printer would be:

27,192,124,91,87,124,65,27,0.

and to turn it off:

27,192,124,91,87,124,64,27,0.

PRINTER OUTPUT

If you are writing programs which send output to the printer, and you are not using the RISC OS drivers, you should avoid splitting up the printing operation into more than one print job, except where a natural break occurs in the printing. The reason for this is that, on a network printer, the printer server normally issues a form feed at the end of every print job (e.g. when a VDU3 or *FX3,0 is performed). So if you are printing, say, a complex sequence of outline characters drawn on the screen, and you enable and disable printer output with VDU2 and VDU3 for each one, then on a network each character will be printed on a separate sheet of paper.

The preferred method of printing on the Archimedes is to open the printer as a file, using a statement such as:

```
P%=OPENOUT("Printer:")
```

You would then write to the file using BPUT# (see the article *BPUT#...GET$#*, Volume 3 Issue 10). This may seem more long-winded than sending a string of VDU codes to the printer, but it is more reliable. It also means that you could, if required, send a complete block of memory to the printer using SYS "OS_GBPB", which could be useful when setting up the printer with various styles or parameters. Remember to close *Printer:* after use, or you will get an error next time you try to open it. It can only be closed by specifying the handle explicitly, e.g. *CLOSE#P%*, and not by *CLOSE#0* - programs should in any case *never* use *CLOSE#0* or **Close* on a RISC OS machine.

DESKJET HINT

Finally, a hint from Chris Parker about using the HP Deskjet with *PrinterLJ*. The recommended margin settings, chosen from the *Page size* box, are:

Top:	2.0mm	Bottom:	10.0mm
Left:	3.0mm	Right:	4.2mm

However, with programs which print right to the bottom of the printable area, such as Poster, the last millimetre sometimes gets printed on the next page. To cure this, simply alter the bottom margin to 11mm.

C Notebook

by Lee Calcraft

This month we present a function for obtaining information about named files. ANSI C provides for only very limited information about a file, and while Acorn's RISC_OSLib provides functions such as xferrecv_checkinsert() which return the filetype of a dragged file, it is often necessary to use calls such as os_file to obtain similar or more detailed information at other times.

The function flib_fileinfo() listed here does just this. Essentially it returns information on whether a named object is present, and whether it is a file or a directory. Additionally it supplies its filetype and length; and could be extended to yield its datestamp.

The function takes three parameters, and returns an integer. The former is a pointer to the filename (to be supplied by the calling routine), while the other two are pointers to integers which will contain the length and filetype of the file on exit. These will only be valid if the function returns a 1 or a 2. A zero or any other positive number means that the file could not be found, while if a -1 is returned, this indicates that a filing system error occurred, and that a Wimp error message was displayed (for example - Drive empty). The function wimpt_complain() is used for this purpose, but if you want to use flib_fileinfo() outside the Desktop, you will need to replace this with a call to SWI &2B, OS_GenerateError.

Listing 2 contains a main() function which could be used for testing flib_fileinfo(). To keep things simple, this runs from the star prompt, rather than as a Desktop application. Because of this, you will either need to temporarily replace the call to wimpt_complain, or to run the program from an Edit Task window.

The test program takes the target filename as a single parameter. For example, if you have called the compiled program Xinfo, then typing:

```
*Xinfo $.!Boot
```

might print something like the following:

```
result 1
len &21b, type &ffe
```

When you have tested the program, the main() function can be discarded, and flib_fileinfo() can be added to your function library.

Listing 1

```
/* C library  */
/* File information using os_file */
/* RISC User June 1991 */
#include "wimpt.h"
#include "os.h"
#include <stdio.h>

int flib_fileinfo(char *name, int *flen, int *ftype)
/* looks for a single named file
 * returns 0 if absent, 1 if file found, 2 if it is a dir
 * if dir not found, it also returns 0
 * if filing system or drive not found it returns greater than 2
 * if a filing system error occurs, a message box is displayed and
 * -1 is returned
 * it uses os_file 17 (see PRM p. 850)
 *
 *   The os_filestr structure:-
 *       int action;               action or object type if output data
 *       char * name;              pointer to filename or pathname
 *       int loadaddr, execaddr;   load, exec addresses
 *       int start, end;           start address/length, end add./attributes
 *       int reserved[4];          space to allow treatment as reg_block
 *
 * NB osf.end will give access attributes - see PRM 836
 */
{
  os_error *e;
  os_filestr osf;                     /* the structure */
  osf.name=name;
  osf.action=17;
  wimpt_complain(e=os_file(&osf));
  if (e) return -1;

  *flen=osf.start;                    /* file length */
  *ftype=(osf.loadaddr >> 8) & 0xfff; /* file type */
  return osf.action;                  /* 1=file 2=dir -1=err else absent */
}
```

Listing 2

```
int main (int argc, char *argv[])

{
  int len;
  int type;

  if (argc<2)
  {
    printf("no argument given\n") ;
    return 0;
  }
  printf("result %i\n",flib_fileinfo(argv[1], &len, &type));
  printf("len &%x, type &%x\n",len,type);
  return 0;
}
```

· POINTS ARISING · POINTS ARISING · POINTS ARISING ·

MAKING THE MOST OF YOUR MULTI-SYNC MONITOR

(Volume 4 Issue 3)

On page 30 of this article, the period of time between line-sync pulses on a standard monitor was given as 64 milliseconds. This should in fact have read 64 microseconds. We are grateful to David Houldcroft for pointing this out.

DESKTOP ZOOM

(Volume 4 Issue 4)

There is a small error in the program listing. Line 1020 should read as follows:

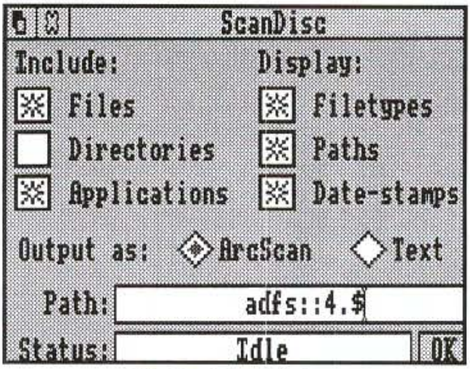
```
1020 DIM block% 255,scale% 15,menu% 99
```

The error is also present on the magazine disc, so if you have the disc you should alter the !RunImage program there.

Cataloguing Discs with ArcScan

Majid Anwar describes a program which enables you to index the contents of all your discs for access by ArcScan III.

This program is supplied only on this month's magazine disc.



Include:
☒ Files
☐ Directories
☒ Applications

Display:
☒ Filetypes
☒ Paths
☒ Date-stamps

Output as: ◈ ArcScan ◇ Text

Path: adfs::4.$

Status: Idle

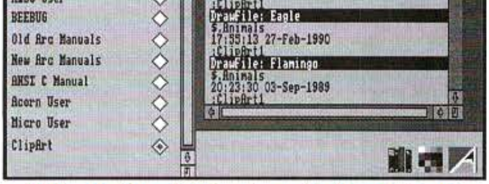
The ScanDisc Window

The application *ScanDisc* is designed to scan a disc for all its directories, applications and files, in order to produce a detailed catalogue including pathnames, datestamps, and filetypes. This can then be output as either a Text file or as an ArcScan file. The former can be useful in keeping a record of a PD library, for example, in order to obtain a printed record by dragging the file to a printer driver.

However, ScanDisc's special feature is its ability to output its data in a form compatible with BEEBUG's ArcScan indexing application, so providing a quick and easy way of creating a *Disc Library* containing details of the contents of all your discs. ArcScan III can then be used to search almost instantaneously entries when needed to determine their location and other information. One example, which I use, is a Clip Art collection; the system is ideal if you have built up a large collection of PD discs; and of course you can use it to catalogue your own discs. ScanDisc provides features for optionally scanning for files and/or directories and/or applications, and to choose the information to be collected about each.

Once ScanDisc has been installed on the icon bar, pressing Select will reveal its main window. Here you can choose the various options on the type of object to include, and the attributes to be included. You must also specify at least a minimal pathname from which to start scanning (e.g. ADFS::0.$ for the root directory of an ADFS format disc). All that remains is to select the type of output file required before clicking on the 'OK' button.

The ScanDisc window shows the progress of the scanning process which when complete displays a save box, for dragging to a directory viewer. Any ArcScan data files which you create in this way can be added to your ArcScan disc and the !Custom file updated to reflect their presence. Alternatively, you might like to set up a duplicate ArcScan disc containing all your own data files created with ScanDisc as described here. Either way, you will find that with the help of ScanDisc, ArcScan III can provide even more information about your system and the discs you use with it.



Clip Art

Vol: 1 to 9

Search for: Animal*

OR ◇ AND ◈ NOT ◇

Draw*

Extended w-card ☒

Finds: 43

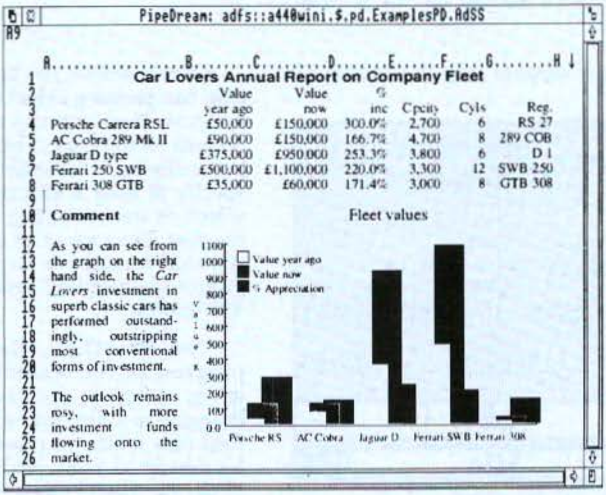
RISC User ◇
BEEBUG ◇
Old Arc Manuals ◇
New Arc Manuals ◇
ANSI C Manual ◇
Acorn User ◇
Micro User ◇
ClipArt ◈

```
DrawFile: Bear
$.Animals
21:20:55 06-Oct-1989
:ClipArt1
DrawFile: Butt
$.Animals
19:56:43 06-Sep-1989
:ClipArt1
DrawFile: Chicken
$.Animals
14:24:45 26-Feb-1990
:ClipArt1
DrawFile: Cow
$.Animals
15:01:50 26-Feb-1990
:ClipArt1
DrawFile: Eagle
$.Animals
17:55:13 27-Feb-1990
:ClipArt1
DrawFile: Flamingo
$.Animals
20:23:30 03-Sep-1989
:ClipArt1
```

Using ArcScan III to locate a selection of clip art

Full details for customising ArcScan to include your own data files are given in the ArcScan III manual accompanying the package. RU

PIPEDREAM 3



Car Lovers Annual Report on Company Fleet

	Value year ago	Value now	% inc	Cpcity	Cyls	Reg.
Porsche Carrera RSL	£50,000	£150,000	300.0%	2,700	6	RS 27
AC Cobra 289 Mk II	£90,000	£150,000	166.7%	4,700	8	289 COB
Jaguar D type	£375,000	£950,000	253.3%	3,800	6	D 1
Ferrari 250 SWB	£500,000	£1,100,000	220.0%	3,300	12	SWB 250
Ferrari 308 GTB	£35,000	£60,000	171.4%	3,000	8	GTB 308

Comment

As you can see from the graph on the right hand side, the *Car Lovers* investment in superb classic cars has performed outstandingly, outstripping most conventional forms of investment.

The outlook remains rosy, with more investment funds flowing onto the market.

PipeDream 3 breaks down the barriers between word processor, spreadsheet and database. You can include numerical tables in your letters and reports, add paragraphs to your spreadsheets, and perform calculations within your databases.

Based on PipeDream 2, the best-selling integrated package for the Archimedes, PipeDream 3 has been completely re-written to take full advantage of RISC OS - if you can use RISC OS, you can use PipeDream 3. It is fully multi-tasking and multi-windowing, so you can work on many documents at once and instantly move information between them. And since PipeDream 3 can automatically load and save most popular file formats, including VIEW and First Word Plus, switching to it from other programs has never been easier.

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PipeDream 3 is for all Archimedes computers with RISC OS and 1Mbyte of RAM.

PipeDream 3 costs £147.00 +VAT.

Major features include:

- many documents loaded at once
- intuitive RISC OS user interface
- displaying and printing of pictures within text
- built-in 93,003 word spelling checker
- file compatibility with PC & Z88 PipeDream and BBC View Professional
- background recalculation
- keystroke compatibility with Z88 & PC PipeDream
- Z88 filing system
- automatic loading of VIEW, ViewSheet, Lotus, First Word Plus, Tab and CSV files
- automatic saving of VIEW, Lotus, Acorn DTP format, Tab and CSV files
- multi-field sorting
- use of all available fonts
- 62 spreadsheet functions
- external references for 3-D modelling
- macro file recorder
- slot protection

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____________________ Post code ____________

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Fax: 0954 211607 Tel: 0954 211472

All trademarks acknowledged. The chart in the screen shown above was produced by sending numbers from PipeDream 3 to Lingenuity's Presenter 2 and then loading the resulting graph back into PipeDream 3.

Colton Software, Broadway House, 149-151 St. Neots Road, Hardwick, Cambridge, CB3 7QJ, England.

Fax. 0954 211607 Tel. 0954 211472

SoundTracker Keyboard (continued from page 15)

```
1430 SWI "OS_Plot":MOV R1,#0
1440 MOV R2,#88:SWI "OS_Plot"
1450 MVN R1,#33:MOV R2,#0
1460 SWI "OS_Plot":MOV R1,#0
1470 MVN R2,#87:SWI "OS_Plot"
1480 .Redraw_jump1
1490 ADD R5,R5,#34:ADD R10,R10,#1
1500 CMP R10,#20:BLE Redraw_loop1
1510 MOV R5,#0:MOV R10,#0
1520 .Redraw_loop2
1530 MOV R4,#0:MOV R8,#0
1540 .Redraw_loop3
1550 ADD x,R5,R4:ADD x,x,#44
1560 CMP R8,#1:ADDGT x,x,#34
1570 ADD R0,x,#34:SUB R1,x,#34
1580 CMP R7,R0:BGT Redraw_jump2
1590 CMP R1,R6:BGT Redraw_jump2
1600 MOV R0,#96+4:LDR R1,[q,#4]
1610 ADD R1,R1,x:LDR R2,[q,#8]
1620 ADD R2,R2,#36:SWI "OS_Plot"
1630 MOV R0,#96+1:MOV R1,#20
1640 MOV R2,#56:SWI "OS_Plot"
1650 .Redraw_jump2
1660 ADD R4,R4,#34:ADD R8,R8,#1
1670 CMP R8,#4:BLE Redraw_loop3
1680 ADD R5,R5,#238:ADD R10,R10,#1
1690 CMP R10,#2:BLE Redraw_loop2
1700 MOV R1,q:SWI "Wimp_GetRectangle"
1710 MOV R11,R0:B Redraw_while
1720 .Redraw_endwhile
1730 LDMFD R13!,{R0-R12,R15}
1740 EQUB 0
1750 .table_arr
1760 EQUB 0:=0:=0:=0:=0:=0:=0:=0:=0:=0
1770 EQUB 0:=0:=0:=0:=0:=1:=2:=3:=4:=0
1780 EQUB 5:=6:=7:=8:=9:=9:=9:=10:=11
1790 EQUB 0:=12:=0:=13:=0:=14:=0:=15:=0
1800 EQUB 16:=0:=0:=17:=0:=18:=0:=0:=19
1810 EQUB 0:=20:=0:=0:=21:=0:=0:=0:=22
1820 EQUB 0:=0:=23:=0:=0:=0:=24:=0:=0
1830 EQUB 25:=0:=0:=0:=26:=0:=0:=0:=27
1840 EQUB 0:=0:=0:=0:=28:=0:=0:=0:=29
1850 EQUB 0:=0:=0:=0:=0:=30:=0:=0:=0
1860 EQUB 0:=31:=0:=0:=0:=0:=32:=33
1870 EQUB 33:=33:=33:=33:=33:=33:=33
1880 EQUB 33:=33:=33:=33:=34:=0:=0:=0
1890 EQUB 0:=0:=35:=0:=0:=0:=0:=0:=0
1900 EQUB 0:=36:=0:=0
1910 ALIGN
1920 .off1 EQUD 2596
1930 .off2 EQUD 2148
1940 .versn EQUD 0
1950 :
1960 .Null_Event
1970 STMFD R13!,{R0-R12,R14}:MOV q,R0
1980 MOV R14,R1:MOV R10,#0:MOV R5,#0
1990 ADR R3,x_arr
2000 .Null_loop1
2010 LDR R0,versn:TEQ R0,#0
2020 LDREQ R0,off1:LDRNE R0,off2
2030 ADD R0,R14,R0:ADD R0,R0,R5
2040 LDR R1,[R0]:MOV R1,R1,LSR #9
2050 SUB R1,R1,#1:ADR R0,table_arr
2060 LDRB R2,[R0,R1]:SUB R2,R2,#1
2070 STRB R2,[R3,R10]:ADD R5,R5,#32
2080 ADD R10,R10,#1:CMP R10,#3
2090 BLE Null_loop1:MOV R10,#0
2100 .Null_loop2
2110 ADR R3,x_arr:ADR R4,n_arr
2120 LDRB R0,[R3,R10]:CMP R0,#0
2130 BLT Null_jump2:CMP R0,#61
2140 BGE Null_jump2:ADR R6,d1_arr
2150 LDR R5,[R6,R0,LSL #2]
2160 LDR R1,window:STR R1,[q,#0]
2170 STR R5,[q,#4]:MVN R1,#91
2180 STR R1,[q,#8]:ADR R7,d2_arr
2190 LDRB R1,[R7,R0]:CMP R1,#1
2200 ADD R2,R5,#20:ADDEQ R2,R2,#14
2210 STR R2,[q,#12]:MVN R1,#3
2220 STR R1,[q,#16]:MOV R1,q
2230 SWI "Wimp_UpdateWindow"
2240 MOV R11,R0:CMP R10,#1
2250 ADDNE R0,R10,#8:MOVEQ R0,#15
2260 SWI "Wimp_SetColour"
2270 .Null_while1
2280 CMP R11,#0:BEQ Null_endwhile1
2290 LDR R9,[q,#28]:LDR R0,[q,#4]
2300 LDR R1,[q,#20]:SUB R2,R0,R1
2310 SUB R9,R9,R2:LDR R8,[q,#36]
2320 SUB R8,R8,R2:ADR R0,x_arr
2330 LDRB R0,[R0,R10]:ADR R1,d2_arr
2340 LDRB R4,[R1,R0]:ADD R0,R5,#34
2350 CMP R9,R0:BGT Null_jump3
2360 SUB R0,R0,#34*2:CMP R0,R8
2370 BGT Null_jump3:CMP R4,#1
2380 BNE Null_jump4:MOV R0,#96+4
2390 LDR R1,[q,#4]:ADD R1,R1,#6
2400 ADD R1,R1,R5:LDR R2,[q,#8]
```

```
2410 ADD R2,R2,#14:SWI "OS_Plot"
2420 MOV R0,#96+1:MOV R1,#22
2430 MOV R2,#16:SWI "OS_Plot"
2440 B Null_jump3
2450 .Null_jump4
2460 MOV R0,#96+4:LDR R1,[q,#4]
2470 ADD R1,R1,#2:ADD R1,R1,R5
2480 LDR R2,[q,#8]:ADD R2,R2,#42
2490 SWI "OS_Plot":MOV R0,#96+1
2500 MOV R1,#16:MOV R2,#16
2510 SWI "OS_Plot"
2520 .Null_jump3
2530 MOV R1,q:SWI "Wimp_GetRectangle"
2540 MOV R11,R0:B Null_while1
2550 .Null_endwhile1
2560 .Null_jump2
2570 ADR R3,x_arr:ADR R4,n_arr
2580 LDRB R0,[R3,R10]:LDRB R1,[R4,R10]
2590 CMP R0,R1:BEQ Null_jump1
2600 MOV R14,#1:CMP R10,#0
2610 BEQ Null_jump5:CMP R10,#1
2620 BGT Null_jump6:LDRB R0,[R3,#0]
2630 LDRB R1,[R4,#1]:CMP R0,R1
2640 MOVEQ R14,#0:B Null_jump5
2650 .Null_jump6
2660 CMP R10,#2:BGT Null_jump7
2670 LDRB R0,[R3,#0]:LDRB R1,[R4,#2]
2680 CMP R0,R1:MOVEQ R14,#0
2690 LDRB R0,[R3,#1]:LDRB R1,[R4,#2]
2700 CMP R0,R1:MOVEQ R14,#0
2710 B Null_jump5
2720 .Null_jump7
2730 LDRB R0,[R3,#0]:LDRB R1,[R4,#3]
2740 CMP R0,R1:MOVEQ R14,#0
2750 LDRB R0,[R3,#1]:LDRB R1,[R4,#3]
2760 CMP R0,R1:MOVEQ R14,#0
2770 LDRB R0,[R3,#2]:LDRB R1,[R4,#3]
2780 CMP R0,R1:MOVEQ R14,#0
2790 .Null_jump5
2800 LDRB R0,[R4,R10]:CMP R0,#0
2810 BLT Null_jump8:CMP R0,#61
2820 BGE Null_jump8:CMP R14,#0
2830 BEQ Null_jump8:ADR R1,d1_arr
2840 LDR R5,[R1,R0,LSL #2]
2850 LDR R2,window:STR R2,[q,#0]
2860 STR R5,[q,#4]:MVN R2,#91
2870 STR R2,[q,#8]:ADR R14,d2_arr
2880 LDRB R1,[R14,R0]:CMP R1,#1
2890 ADD R2,R5,#20:ADDEQ R2,R2,#14
2900 STR R2,[q,#12]:MVN R1,#3
2910 STR R1,[q,#16]:MOV R1,q
2920 SWI "Wimp_UpdateWindow"
2930 MOV R11,R0
2940 .Null_while2
2950 CMP R11,#0:BEQ Null_endwhile2
2960 LDR R7,[q,#28]:LDR R0,[q,#4]
2970 LDR R1,[q,#20]:SUB R2,R0,R1
2980 LDR R6,[q,#36]:SUB R7,R7,R2
2990 SUB R6,R6,R2:ADR R0,n_arr
3000 LDRB R0,[R0,R10]:ADR R1,d2_arr
3010 LDRB R4,[R1,R0]:ADD R0,R5,#34
3020 CMP R7,R0:BGT Null_jump9
3030 SUB R0,R0,#34*2:CMP R0,R6
3040 BGT Null_jump9:CMP R4,#1
3050 BNE Null_jumpA:MOV R0,#0
3060 SWI "Wimp_SetColour"
3070 MOV R0,#96+4:LDR R1,[q,#4]
3080 ADD R1,R1,#6:ADD R1,R1,R5
3090 LDR R2,[q,#8]:ADD R2,R2,#14
3100 SWI "OS_Plot":MOV R0,#96+1
3110 MOV R1,#22:MOV R2,#16
3120 SWI "OS_Plot":B Null_jump9
3130 .Null_jumpA
3140 MOV R0,#7:SWI "Wimp_SetColour"
3150 MOV R0,#96+4:LDR R1,[q,#4]
3160 ADD R1,R1,#2:ADD R1,R1,R5
3170 LDR R2,[q,#8]:ADD R2,R2,#42
3180 SWI "OS_Plot":MOV R0,#96+1
3190 MOV R1,#16:MOV R2,#16
3200 SWI "OS_Plot"
3210 .Null_jump9
3220 MOV R1,q:SWI "Wimp_GetRectangle"
3230 MOV R11,R0:B Null_while2
3240 .Null_endwhile2
3250 .Null_jump8
3260 ADR R5,x_arr:ADR R4,n_arr
3270 LDRB R0,[R5,R10]:STRB R0,[R4,R10]
3280 .Null_jump1
3290 ADD R10,R10,#1:CMP R10,#3
3300 BLE Null_loop2
3310 LDMFD R13!,{R0-R12,R15}
3320 .window EQUD 0
3330 .x_arr EQUB 0:=0:=0:=0
3340 .n_arr EQUB 0:=0:=0:=0
3350 .d1_arr
3360 EQUD 22:EQUD 44:EQUD 56:EQUD 78
3370 EQUD 90:EQUD 124:EQUD 146:EQUD 158
3380 EQUD 180:EQUD 192
```

SoundTracker Keyboard

```
3390 EQUD 214:EQUD 226
3400 EQUD 260:EQUD 282
3410 EQUD 294:EQUD 316
3420 EQUD 328:EQUD 362
3430 EQUD 384:EQUD 396
3440 EQUD 418:EQUD 430
3450 EQUD 452:EQUD 464
3460 EQUD 498:EQUD 520
3470 EQUD 532:EQUD 554
3480 EQUD 566:EQUD 600
3490 EQUD 622:EQUD 634
3500 EQUD 656:EQUD 668
3510 EQUD 690:EQUD 702
3520 EQUD 736:EQUD 758
3530 EQUD 770:EQUD 792
3540 EQUD 804:EQUD 838
3550 EQUD 860:EQUD 872
3560 EQUD 894:EQUD 906
3570 EQUD 928:EQUD 940
3580 EQUD 974:EQUD 996
3590 EQUD 1008:EQUD 1030
3600 EQUD 1042:EQUD 1076
3610 EQUD 1098:EQUD 1110
3620 EQUD 1132:EQUD 1144
3630 EQUD 1166:EQUD 1178
3640 .d2_arr
3650 EQUB 1:=2:=1:=2:=1:=1:=2:=1:=2:=1
3660 EQUB 2:=1:=1:=2:=1:=2:=1:=1:=2:=1
3670 EQUB 2:=1:=2:=1:=1:=2:=1:=2:=1:=1
3680 EQUB 2:=1:=2:=1:=2:=1:=1:=2:=1:=2
3690 EQUB 1:=1:=2:=1:=2:=1:=2:=1:=1:=2
3700 EQUB 1:=2:=1:=1:=2:=1:=2:=1:=2:=1
3710 ALIGN
3720 :
3730 ]:NEXT
3740 name$="!RunImage"
3750 SYS "OS_File",10,name$,&FF8,,code%,P%
3760 PRINT "Absolute code saved as '"name$"'."'
3770 END
```

Going International (continued from page 35)

```
540 name?len=13:PROCprintchars(line%,kb%,$name)
550 line% += 1
560 ENDIF
570 NEXT: ENDPROC
580 :
590 DEF PROCone(kb%): LOCAL line%
600 SYS "OS_ServiceCall",,&43,2,kb%,name,20 TO ,,,,,len
610 name?len = 13: c$=$name
620 FOR line% = 4 TO 23
630 PRINT TAB(0,line%)STRING$(80," ");
640 PRINT TAB(0,line%);kb%;TAB(3,line%)c$
650 NEXT
660 FOR line% = 4 TO 23
670 PROCprintchars(line%,kb%,c$)
680 NEXT: ENDPROC
690 :
700 DEF PROCprintchars(line%,kb%,c$)
710 LOCAL alph%, c_alph%
720 PRINT TAB(0,24)"Press a key or suitable combination of keys ";
730 OSCLI("COUNTRY "+c$)
740 OSCLI("FX15"):c% = GET
750 PRINT TAB(0,24)STRING$(79," ");
760 PRINT TAB(18,line%);c%;TAB(22,line%)"&";~c%
770 SYS "OS_Byte",71,127 TO ,c_alph%
780 PRINT TAB(33+8*(c_alph%-100+2*(c_alph%=107)),line%)"[   ]"
790 FOR alph% = 100 TO 105
800 SYS "OS_ServiceCall",,&43,3,alph%-2*(alph%=105),name,20 TO ,,,,,len
810 name?len = 13: OSCLI("ALPHABET "+$name)
820 PRINTTAB(35+8*(alph%-100),line%)CHR$c%
830 NEXT: ENDPROC
840  :
850 DEF PROCerror
860 OSCLI("FX4"): OSCLI("COUNTRY UK")
870 PRINT''REPORT$;" at line ";ERL
880 ENDPROC
```

Impression is not

Well OK, that's not true. Although Impression has established itself as the most popular DTP program (and the most flexible) for the Archimedes, it may be surprising to learn that most owners use it day in, day out as their preferred word processor.

Impression was in fact designed from the start to be a word processor, by the company that developed Wordwise and Inter-Word, the most popular word processors on the BBC Micro. However Impression now uses the power and flexibility of the Archimedes to take word processing beyond what was possible on the original BBC Micro while losing nothing of the ease and simplicity of its predecessors.

" Easier to use than Wordwise ". Well certainly no more difficult. For example to create and print a simple letter, even one many pages long, involves the following simple steps, (assuming a printer is set up and ready).

- ➤ Start Impression
- ➤ Click on icon for new document
- ➤ Click in window and type letter
- ➤ Press PRINT key followed by RETURN

There are no embedded commands to remember and it's not even necessary to use any menu options. If you want to use different text styles or justification options, these can be selected from the function keys (or menus). Selecting regions of text (for deleting, copying, moving etc) could not be easier than with the mouse, especially since we added such touches as automatic scrolling of the window when attempting to select beyond the visible window.

So not only do we feel Impression is easier to use than other word processors, it is also more powerful - not only can it handle more complex documents, it copes with much longer documents and provides unmatched control of the presentation and appearance of the finished document. By using the Acorn outline font system Impression offers complete control of type style and size - the type on screen exactly matches the final printed result.

One feature that sets Impression apart from other DTP programs is that it offers both the outline fonts system *and* a system-like font for simple 'character' mode or draft mode operation. This also means it can drive dot-matrix printers using their native built-in fonts for maximum speed. Of course using the RISC OS printer drivers in high quality mode means that whatever you do on screen, whatever fonts, size, position, style, graphics are used, they will be reproduced at the maximum resolution of the printer.

For the power user (that is someone who produces documents of any type on a regular or professional basis) Impression II provides the necessary features (frames, styles, master pages, embedded graphics, unlimited length documents, contents and index generation etc).

$$J_n(x) = \frac{x^n}{2^n n!} \sum_{s=0}^{\infty} \frac{1}{s!(n+1)^s} \left(-\frac{1}{4}x^2\right)^s$$

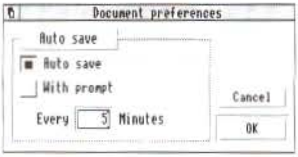
New!

Version 2.1 is now available. It includes automatic timed save, crop- mark printing, vertical rules for things like tables and sidebars, and other new features. Contact Computer Concepts for upgrade details.

When used with our highly acclaimed Equasor equation generator program (£49+VAT) Impression is the ideal tool for producing technical or mathematical documents.

> In order to highlight particular sections of text Impression 2.1 allows sidebars, such as the one used here, to be set as part of the style. The vertical position, thickness and colour can all be controlled from the style editor.

But rather than the more obvious and powerful features, it's the subtle and often overlooked aspects of Impression that make it a delight to use - its speed of operation; the fact that most dialogues can stay on screen while you continue to edit; the care and attention paid to the visual side of the program. Even though the program is now more than a year old it continues to receive glowing reviews.



Auto save

☑ Auto save

☐ With prompt

Every 5 Minutes

Impression 2.1 can automatically save your document every 'n' minutes, with options to do this with or without prompting.

a DTP program !

To quote Paul Beverley, editor of Archive magazine. *"Thanks to Impression (which I am more and more impressed with every day) I have managed to shorten the time taken to produce the magazine quite considerably."*

> Although Impression is a word processor, what other word processor, or for that matter DTP program, is able to produce results like this advert.

Impression 2.1 . . . . . .
£169.00 +VAT (£198.57)

Impression Junior . . .
£89.95 +VAT (£105.69)

Beyond other WP's

Impression and Impression Junior offer many features beyond those normally found on Archimedes word processors. Here are just a few:

- **Format as you type - no reformat key or menu**
- **Outline fonts, any size, any typestyle, any position on the page**
- **Multi-column work**
- **Text automatically flows around graphics**
- **Full graphics capabilities**
- **Embedded graphics (flows with the text)***
- **Simple, intuitive editing with a wide range of key short-cuts**
- **Retroactive styles and master pages***
- **Fine typographic control - kerning, text size, line & paragraph spacing etc to a 72,000 dpi resolution***
- **Rules for sidebars, rule-offs, tables***
- **Huge range of print options**
- **Multi-line headers/footers even with graphics**
- **Draft 'character' mode printing or RISC OS printing**
- **Full colour control**
- **Includes enhanced version of SpellMaster, the popular BBC spelling and typing checker**

*Not all of these features are available on Impression Junior

Impression business supplement

This optional extension pack provides a range of new features for the professional or business user. It includes:

- A new range of file loaders for Microsoft Word (RTF), Word Perfect, Wordstar and Pipedream 3 allowing files from these word processors to be dropped directly onto Impression frames.
- Our ExpressionPS utility for typesetting documents. Greatly simplifies the process of producing PostScript files suitable for typesetting. Automatically substitutes PostScript font names, allows screen angles and screen density to be set.
- Full (four) colour separations. So now at last Archimedes owners can output four colour PostScript separations from any Impression document. Essential for anyone producing high quality colour leaflets or adverts. This offers advanced features such as under-colour removal and Adobe recommended screen angles.
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Hints & Tips. . . Hints & Tips

PRIVATE SYSTEM VARIABLES

Alan Wrigley

Many applications set up their own system variable to hold the pathname of the application directory. This is then used for reference while the program is running, e.g. to find resources or to save choices. This is normally done in the !Run file, using a command such as:

```
Set MyApp$Dir <Obey$Dir>
```

Two points need to be made about this. Firstly, if your program has no need to refer to files in the application directory, there is really no need to set up a variable. In other words, don't just copy everything from other applications' !Run files unless you actually need to.

Secondly, the system variable should not be used after the first call to Wimp_Poll. This is because another application could in theory set up a variable of the same name, or there could be two copies of your application installed. You should instead use OS_ReadVarVal before the polling loop to return its value, and store this in a variable within the program, for example dir$ as in the following example:

```
   DIM buffer 256
   SYS "OS_ReadVarVal","MyApp$Dir",buffer,
256,0,3 TO ,,length
   buffer?length=13
   dir$=$buffer
```

FILECORE IN USE

Richard Bates

There appears to be an extremely simple method of clearing the "Filecore in use" error which sometimes occurs. First, press F12 to reach the command line or go to *New task* on the Task menu. Next type:

```
RMKill FileCore%ADFS
```

followed by:

```
RMReinit ADFS
```

and voila - you can now use your discs again. This sequence will only work, of course, if you are using the ADFS. What happens is that, if an error occurs during a filing operation, a flag is set to prevent the routine being re-entered. If for some reason the error is not cleared, the next time a disc operation attempts to use the routine, the "Filecore in use" message will be generated. Killing the appropriate instance of FileCore and re-initialising the filing system module, as described above, clears the error condition.

WATCHDOG AND SCSI

Alan Wrigley

Most of the facilities of our popular anti-virus application, *Watchdog* (Volume 3 Issue 7 and Volume 4 Issue 4), work equally well on any filing system. This applies in particular to the various protection options. But the *Clean* facility will only work on ADFS since it uses a SWI call specific to the ADFS. However, by making some minor alterations to the module, this option can be made to work with SCSI. Firstly, at line 670 in the *MakeWatch* source program, alter *ADFS_FreeSpace* to *SCSI_FreeSpace*. Secondly, in line 820 alter *adfs* to *SCSI*. These line number apply only to the versions of the program listed in the magazine.

A further point that needs to be made is that if you select the *Clean* option for any drive while logged on to a network, you will get an error because NetFS does not recognise the command **Compact*. To cure this, alter line 810 to read *adfs:Compact* or *SCSI*:Compact as appropriate.

LOGGING ON TO A NETWORK

Andrew Smith

On the BBC B and Master micros, it was possible to hide your user name and password when logging onto an Econet network, by entering:

```
*I Am :
<Username> <Password>
```

On the Arc, however, this does not appear to be possible, either with the conventional **I Am* command or with the **LogOn* command. However, when using the Desktop the names can be hidden, by the following method: click Select on the Econet icon on the icon bar, then press Return at the user name prompt and enter the user name instead at the password prompt. RISC OS will then open a command window to prompt for the password if there is one. In both cases what you type in is hidden. The only disadvantage of this method is that the Logon window stays open, but this can easily be closed using its close icon.

Hints & Tips. . . Hints & Tips

EXAMINING APPLICATION MEMORY

Alan Wrigley

David Spencer's *Spyglass* (Volume 4 Issue 6) provides an excellent way of examining the memory being used by a task while it is running - something which is rather difficult to do with multi-tasking programs. Another method, which in some cases may even have advantages over *Spyglass*, is to save a block of memory to a file at the precise point in the program at which you wish to examine it. This is particularly useful for machine code programs, where it is difficult to access specific memory locations once the program has terminated. To achieve this, you can use SWI "OS_File" 10. As an example, supposing you wish to examine 256 bytes of memory starting at the *label* block. The following section inserted into your source code will do the trick:

```
MOV R0,#10:ADR R1,pointer
MVN R2,#2:REM filetype=&FFD
ADR R4,block:ADD R5,R4,#256
SWI "OS_File"
.....
.pointer
EQUS "TempFile":EQUB 13
```

The file can then be examined later by dragging it into Edit, or *Dumping it etc.

MORE ON BOOT FILES

George Foot

Several articles in RISC User recently have covered the subject of boot files and applications. It is worth remembering that if for any reason you want to start up the Desktop without running the boot file, you can do this with Shift-Break. This may be convenient when not all the applications in the boot sequence are required, or when an error is found in the boot file. Note that, if your machine is configured to *NoBoot* rather than *Boot*, these actions will be the other way round - i.e. Shift-Break will start the boot sequence and Ctrl-Break will just start the Desktop.

A problem which can arise with a boot sequence that installs applications is that, if the application's !Run file does not contain an *IconSprites* command (as for example with Impression), the sprite may not appear on the icon bar when it is installed. This is because the application normally relies on the Filer performing an *IconSprites* automatically when it opens the directory viewer. To overcome this, modify the !Run file to include the following line:

```
IconSprites <Obey$Dir>.!Sprites
```

QUICK FILE DUMP

J. V. Parker

To perform a *Dump quickly on a file from the Desktop, you can create a simple application, called *!Dump*, which contains just a !Run file with the following lines:

```
Echo <22><12>
Echo <19><0><7><0><0><0>
Echo <19><7><0><0><0><0>
Echo <14>
Dump %*0
```

This can be installed on the icon bar using *TinyDirs*, and any file dragged to its icon will be *Dumped to the screen. Furthermore, if you change the penultimate line listed above to:

```
Echo <14><2>
```

and add a further line to the end of the !Run file as follows:

```
Echo <3>
```

then the dump will also be sent to the printer.

TINYDIRS

Alan Wrigley

The hint given above serves as a reminder that *TinyDirs* is a useful and often under-used application. It is supplied with every Archimedes on Applications disc 2, and details on how to use it are given in the User Guide. It is most useful in situations such as that mentioned above, where a simple application, which does not need Desktop windows or menus, can be made available on the icon bar without needing to be started up as a Wimp task, with all the necessary code that the latter implies. Note that the application is not installed in the same sense as a Wimp task, as it is not multi-tasking and is not run until you click on it or drag a file to it.

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Postbag Postbag

LETTERHEAD FOR JUNIOR

In response to the article **Using DTP for Letter Writing** *by Maurice Edmundson, RISC User Volume 4 Issue 5, here is the method I use with Impression Junior. To set up a standard letter with blank continuation sheets, first click on the Junior icon on the icon bar to open a new document. Next select the frame, then select* **Insert New Page** *from the* **Edit Menu**. *Scroll to the newly created page and click with Adjust in the frame there. This has the effect of linking the frames, as described on page 45 of the manual. Now you can go back to the first page and add frames for your address, date, etc. The main text frame can be reduced in height to make room for these.*

When the main text frame is full it will automatically flow to the next blank page. Use **Force to Next** *from the* **Frame Menu** *if you want to go to the next blank page at the end of a paragraph.*

G.R.Frost

The subject of letterheads using DTP has aroused a lot of interest in recent issues. As with many things, there are almost as many ways of tackling this as there are users, which all goes to show just what a powerful and versatile tool any DTP package is.

ARMED TRUCE BREAKS OUT

Following your news item **UnARMed Combat** *in RISC User Volume 4 Issue 5 regarding supplies of ARM3 chips, I would like to make it clear that although VLSI Technology has been experiencing yield variations, Acorn has obtained assurances from Advanced RISC Machines Ltd. and VLSI that all units shipped to Acorn for use in Archimedes will support the clock periods necessary for Archimedes design. Further, we are working to ensure that third party suppliers of ARM3 products for Archimedes systems also gain this assurance.*

Malcolm Bird, Technical Director, Acorn

The intention of the news item in question was to inform readers of the situation regarding ARM3 supplies. We apologise if we cast any doubt on the integrity of the devices used by Acorn. The basis of the item was information obtained directly from VLSI(UK)Ltd., and two VLSI distributors. Clearly, it would not be in their interests to release such information unless it was believed to be absolutely correct. It will of course be beneficial to everyone if Acorn can ensure reliable supplies for third party developers like ourselves.

IDEA HARD DISC DRIVES FROM ICS

Ian Copestake, of Ian Copestake Software, has asked us to publish the following in response to our review of his ideA A3000 Internal Hard Disc Upgrade in RISC User Volume 4 Issue 6.

We would like to comment on some of the criticisms made in your review **A Good ideA**.

Our circuit boards are indeed hand soldered; this method can in fact produce a more reliable product. The skilled local workforce we employ do not need text screens showing component location (though we do provide an overlay for any service personnel who need one). No green solder mask is needed with hand soldering. Neither the text screen nor solder mask benefit the user of the product in any way - they are required only if mechanical soldering is used, and their absence does not necessarily indicate an "amateurish" product.

The reviewer criticises our board because excess flux has not been removed. We use a cored solder containing organic, non-corrosive flux which need not be removed except on cosmetic grounds. We feel these grounds do not apply to a product which is invisible in use and may never be seen at all by users who have the fitting done by a dealer.

The reviewer's comment about the mounting brackets was correct for the review sample but we have already introduced a superior type.

The misplaced connector? Yes, we made a mistake which does not affect performance and will be corrected in the next production run. The first batch of any computer circuit board is likely to have one or two temporary patches.

IDEA3IN20s have been on sale for over six months now and not one has given rise to a complaint. Acorn themselves have had one for some time and report no problems. A more reliable product is hard

Continued on page 71

Technical Queries

WIMPSLOT AND MEMORY PAGE SIZE

Dear Sir

I sometimes find when running an application on my 310, or dragging a data file to one already installed, that the computer crashes, giving an "Address exception" error. Why does this happen?

Robert Molesey

There may be many reasons for this error, but if it is an application which was not written on your machine, and if it crashes sometimes but not others, it may be worth suspecting the WimpSlot setting. When writing programs which are intended to run on other Arcs, it is necessary to take into account the different values of memory page size which can apply. A 1 Mbyte machine has a page size of 8K, on a 2 Mbyte machine this is 16K, while on a 4 Mbyte Arc it is 32K. When an allocation of memory is requested, e.g. by a WimpSlot command, a whole number of pages is allocated, rounded up if necessary. So if a program requires a WimpSlot of 72K, then 72K will be provided on an unexpanded 310, 80K on a 420, and 96K on a 440. If the program is written on a 440, it may appear to work quite correctly, but when run on a 310 it might not. Short of exhaustive testing on all models, the answer to this problem is to ensure that memory allocations are requested in whole page sizes for the machine on which the program is developed.

If the program requires more memory to install itself than has been allocated, the Wimp will report an error of the form "Application needs at least nK to start up". However, if the program installs correctly but then tries to load data without checking that there is sufficient space for it, it is likely to crash with an "Address exception" error. If you encounter this error on running a program or loading data into it, it is worth inspecting the !Run file, and increasing the WimpSlot to see if this cures the problem. Properly written programs, of course, should never try to use memory space without first checking that it is available.

Alan Wrigley

AUTOMATIC LOADING OF FILES

Dear Sir

I wish to run the RISC User Diary with my DiaryFile already loaded, when the computer is booted up. I have tried various methods, but I either get two Diary applications installed, with DiaryFile loaded from one of them, or I get the message "No run action specified for this file type".

Iain Gillies

The way to run Diary (or any other application that can be started by running one of its data files) with a file already loaded is to suffix the command to run the application with the name of the file (with a space between the two), for example:

```
Run adfs::HardDisc.$.Apps.!Diary a
dfs:: HardDisc.$.Apps.!Diary.DiaryFile
```

This is basically the command that is executed if you double-click on DiaryFile. The filetype for diary files if &FEF, so when it is double-clicked the system variable *Alias$@RunType_FEF* is examined. This will have been set (in Diary's !Boot file) to something like:

```
Run adfs::HardDisc.$.Apps.!Diary %*0
```

The expression *"%*0"* is then automatically replaced by the name of the file you double-clicked on. The result is the execution of the command listed above. This mechanism applies to any application that can be run by double-clicking on one of its data files.

Glynn Clements

PROBLEMS WITH TYPED LISTINGS

Dear Sir

I have tried to type in the NotePad application from RISC User Volume 2 Issue 5, but so far have had no luck with it. The icon appears on the icon bar, but I don't know how to debug an application, and all I get is a window which says "Unknown array (Internal error code 620)", and also "Unknown or missing variable (Internal error code 490)". What can I do about this?

Ivor Clarke

When typing in listings from the magazine, it is almost impossible to avoid making a mistake or two somewhere along the way. Unless there is a misprint in the listing

Technical Queries

(which would normally be spotted quickly and publicised in *Points Arising*), then the two errors you have described will *always* be caused by a typing error. The internal error code is simply a method advocated by Acorn to get the Wimp to report the line number at which the error occurred.

In this particular case, line 620 contains the statement STRING$(88,CHR$0). Basic will recognise this as a valid statement, but if STRING$ is mistyped, perhaps as STRING or STRINGS, it will not do so, and because it is followed by parameters in brackets, will assume it is an array, which it will then fail to find. Line 490 reads:

```
UNTIL quit
```

The only variable here is *quit*, so if this has been mistyped, either here or where it is first declared (in this case line 350), then Basic will report a missing variable error.

The subject of debugging typed listings was covered in *Into the Arc*, Volume 3 Issue 7, and there have been a number of other articles in RISC User describing debugging techniques and utilities, including this month's very useful article *Debugging the Wimp*. For Basic programs, it is worth repeating here a hint which was given in the article referred to above. Most programs we publish will have an error handler. This will be a line near the start of the program which begins ON ERROR. Replace this line temporarily with the following line:

```
ON ERROR MODE0:REPORT:PRINT" at line
";ERL:END
```

If you now run the program directly from Basic, rather than from the Desktop by double-clicking, it will appear to work correctly as a Wimp task, but any errors will return you to Basic and report the error and line number as before. However, this time the program and all its variables will be intact, and by examining the offending line you should be able to work out the cause of the error. When you are satisfied that the program is working correctly, you should then restore the original ON ERROR line in place of the temporary one.

Alan Wrigley

Postbag (continued from page 69)

to imagine, and the idea that readers should wait for an improved "second generation" of 2.5" hard disc is not borne out by our experience.

The reviewer criticises our software because it might not work with all possible future Acorn machines. We will naturally keep pace with IDE and Acorn developments over the coming months, and take care of any software updates which might be needed by existing customers.

Readers who have not quite outgrown their floppy discs should by all means wait a few months before changing to a hard disc, and we will welcome comparison between our own IDE products and others which may then be available.

Those who need a hard disc now might like to read about ***ideA*** *products in Archive (January), The Micro User (January), BBC Acorn User (April) or Archimedes World (June). Regarding prices, we do pass on reductions whenever possible; but IDEA3IN20 in particular is unlikely to be reduced soon since we have already anticipated future cost savings.*

Ian Copestake, Ian Copestake Software.

PROTEXT 5 REVIEW

Thank you for reviewing our Protext 5 software in RISC User Volume 4 Issue 6. The difficulties the reviewer had with installation have now been sorted out. Protext is now configured as an Archimedes application in the standard way, so it is only necessary to copy the !Protext directory to the required location. The program may also be run directly from the supplied floppy disc.

Version 5.08 of Protext includes a number of other improvements and has been available since February. Upgrades have been sent free to all registered users.

We are still developing the multi-tasking RISC OS version and we will of course inform RISC User when this is ready.

Mark Tilley, Arnor Ltd.

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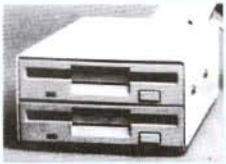
This is a small selection of the software that we can supply at competitive prices. Please call for any item you require.

A3000 3.5" SECOND DRIVE



The kit consists of a 3.5 inch floppy disc drive, data cable, power cable, metal case (cream coloured), an interface carrier board and full fitting instructions. You will be required to take the current drive out of the A3000 and replace it with the interface carrier board (unlike some add-on drives, you can still use your internal podule socket). The original drive then fixes in the case with the second drive and the case is connected to the A3000 with two cables. As the connectors are detachable, the unit can be easily disconnected from the computer if the need arises. **£125**

TELETEXT

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A3000 5.25" SECOND DRIVE

The kit and assembly are similar to our 3.5" kit except the case is larger and the mechanism is a high quality TEAC 5.25" drive. The drive (unlike some you can buy) is also buffered to Acorn specifications so eliminating the possibility of damage to your A3000 (buffering is not required for an additional 3.5" drive). **£169**

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FURTHER INFORMATION

A catalogue of our products is currently available. Please call or write if you require this or further information on any A3000 or Archimedes product.

O.N.I.C.S. L.T.D

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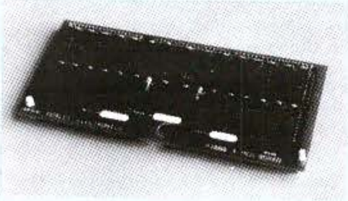

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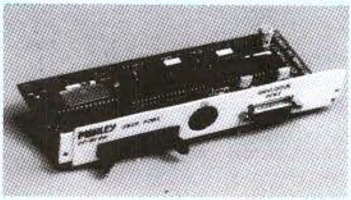

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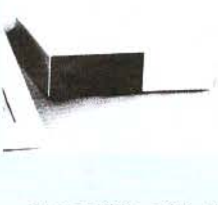

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